Wastewater Conveyance And Treatment Project For The Mexicali II Service Area

Environmental Assessment

Prepared pursuant to the National Environmental Policy Act (NEPA) 42 U.S.C. 433(2)(C), 16 U.S.C. 470, 49 U.S.C. 303 and 23 U.S.C. 138
for the

United States Environmental Protection Agency

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The following person may be contacted for additional information concerning this document:

Doug Liden
U.S. Environmental Protection Agenccy
75 Hawthorne Street, WTR-4
San Francisco, CA 94105
Phone: (415) 972-3406
Fax: (415) 947-3537
Email: liden.douglas@epa.gov

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Purpose and Need for Action

1.1 Background

Mexicali, Baja California, in the United States-Mexico border region, has been growing rapidly (Figure 1-1). Population growth is exceeding the capacity of the community's infrastructure and new and upgraded facilities are needed to accommodate the current and future growth. The Mexicali Wastewater Collection and Treatment project has been undertaken in an effort to improve water quality in the New River, with the goal of achieving Mexican water quality standards established in the NOM-ECOL-001-1996.

An Environmental Assessment (EA) was prepared in 1997 by CH2MHILL for the improvements to the Mexicali, Baja California wastewater system. The project was designed to improve and upgrade the wastewater collection, conveyance, and treatment facilities in the City of Mexicali, in order to provide an adequate and reliable level of sanitation, and to improve the quality of the water discharged to the New River. The project was divided into two separate groups of projects designated as Mexicali I and Mexicali II (Figure 1-2). While the Mexicali I Projects are proceeding on schedule, the Mexicali II Treatment Plant Project is on hold.

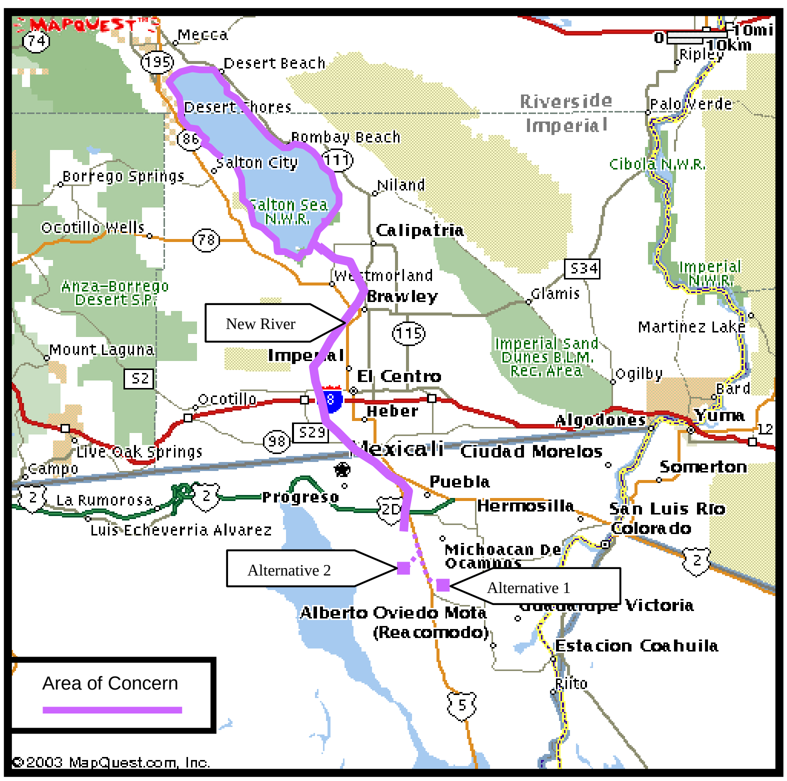


Figure 1-1. Location Map & Area of Concern.

The Mexicali II projects called for the construction of a new Wastewater Treatment Plant to the south of the City of Mexicali in an area called El Choropo. However, due to public opposition, an alternate location known as Las Arenitas, south of the New River Transboundary Watershed, has been proposed for the construction of the wastewater treatment plant. The project also consists of the construction of a force main and a pump station to convey the flows from the existing Pump Station No. 4 to the Las Arenitas Site, as well as emergency pumping equipment ("the Proposed Project"). The effluent from the new plant would be discharged into the Hardy River, which eventually flows to the Colorado River Delta. The area of concern is the proposed treatment plant locations, the New River and the Salton Sea and any associated area directly impacted by the Proposed Project.

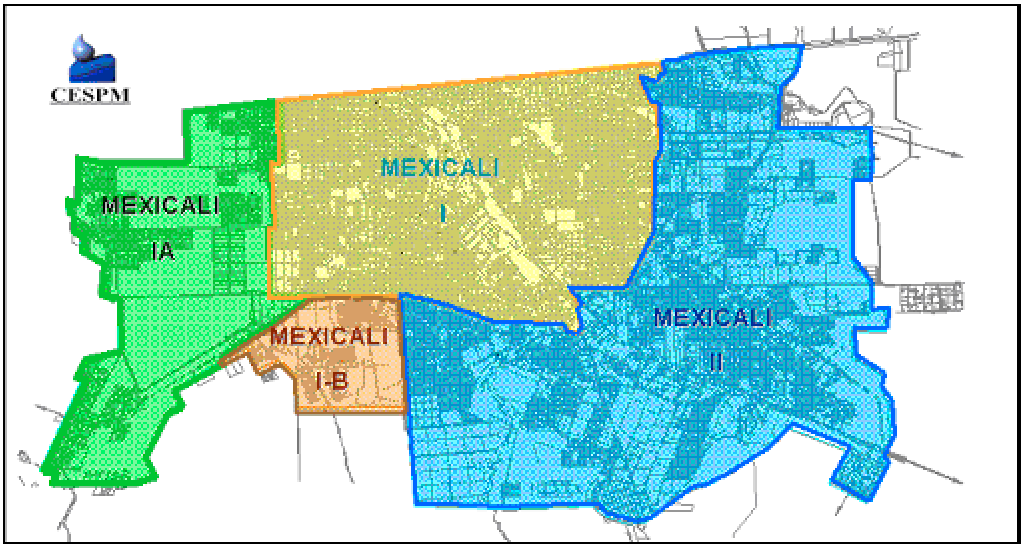


Figure 1-2. Mexicali I and Mexicali II Service Areas.

The New River flows northward from Mexico into the United States within the Colorado River Basin, which is located partly in the southeastern portion of the State of California. The Colorado River Basin covers approximately 13 million acres (20,000 square miles) (RWQCB, 1994) and includes the Salton Sea, a landlocked, saline lake into which the New River, Alamo River, Whitewater River, and agricultural drains discharge. The New River was formed in the early 1900s by flooding from the Colorado River. Water has continuously flowed in the New River sine irrigate agriculture began in the Mexicali and Imperial Valleys early in the 19th Century.

Colorado River water is diverted for agricultural, municipal, and industrial uses in the Basin. It is managed and distributed by the Imperial Irrigation District (IID), which operates approximately 500,000 acres for agricultural irrigation (IID website). The New River collects agricultural drainage water from the western sections of the IID and domestic and industrial wastewater in the United States and Mexico. Currently, the New River is listed under Section 303 (d) of the Clean Water Act for the following pollutants: sedimentation/siltation, pesticides, bacteria, nutrients and volatile organic compounds (VOCs) and the Salton Sea is listed for selenium, salt and nutrients.

The original alternative selected to address the wastewater deficiencies in the City of Mexicali was based on the 1996 update to the Master Plan for improvements to water, wastewater, and sanitation for the City of Mexicali prepared by the Mexican National Water Commission (Comisión Nacional del Agua, CNA). The updated Master Plan divided Mexicali into three major zones for the supply of water and wastewater services. While the sanitation program has been designed to operate as three independent sewer collection and treatment systems, the Border Environment Cooperation Commission (BECC) application only defines improvements to Mexicali I and Mexicali II systems. The originally-planned improvement projects and current conditions are as follows:

<u>Mexicali I</u>: Originally Planned Improvement Projects

- Rehabilitation (slip-lining) of 20,010 feet of sewers

- Replacement of 24,250 feet of sewer pipeline
- Construction of new sewers, pump stations and force mains
- Rehabilitation of four lift stations
- Rehabilitation of Mexicali I Wastewater Treatment Plant
- Installation of telemetry equipment at pump stations
- Expand Mexicali I Wastewater Treatment Plant to 30 Million Gallons per Day (mgd)

<u>Mexicali I</u>: Current Conditions

Most of the Mexicali I projects have been completed. Wastewater generated in the Mexicali I area is collected by the sewer network and conveyed to the Zaragoza Wastewater Treatment Plant. Currently proposals are being solicited for upgrades to the Zaragoza Wastewater Treatment Plant, funded by loans from the Japanese International Banking Interest. These upgrades include disinfection facilities at the plant.

Total capacity of treatment facilities was designed for 22.4 mgd (980 lps or 25,076 AF/y). However, the BOD loading is actually lower than was anticipated. Therefore, the actual capacity (in terms of BOD removal) of the treatment plant is closer to 27.4 mgd (1,200 lps or 30,685 AF/y) (Personal conversation on 12/13/02 between EPA and Dr. Ramos, designer of Zaragoza Treatment Plant). The current flows entering the headworks of Zaragoza Wastewater Treatment Plant are approximately 27.4 mgd (1,200 lps or 30, 684 AF/y).

<u>Mexicali II</u>: Originally Planned Improvement Projects

- Construction of sewer Pump Station No. 4
- Construction of 31,170 feet of discharge force main for Pump Station No. 4
- Construction of 91,370 feet of sewers
- Replacement of 6,600 feet of sewers
- Rehabilitation of two pump stations
- Construction of a 20.1 mgd (880 lps or 22,501 AF/y) Mexicali II Wastewater Treatment Plant in El Choropo
- Installation of telemetry equipment at pump stations and treatment facilities

<u>Mexicali II</u>: Current Conditions

Wastewater generated by the Mexicali II area was originally intended to be treated at a proposed new wastewater treatment plant in El Choropo, but this plant has not been built because of public opposition from local residents. Consequently, approximately 13.7 mgd (600 lps) of untreated wastewater enter the New River. Pump station No. 4 was built with Comisión Estatal de Servicios Públicos de Mexicali (CESPM) financing.

The United States Environmental Protection Agency (EPA) and the Mexicali Bi-national Technical Committee (BTC) have been aggressively pursuing other options for a treatment plant, which will accommodate the Mexicali II flows. These options must take into account the recently adopted Total Maximum Daily Load (TMDL) for pathogens in the New River. This TMDL sets a Waste Load Allocation (WLA), which must be met by all point sources in the U.S. over the next three years. One of the options being considered by BTC is the construction of a wastewater treatment plant in the Las Arenitas area (south of the New River drainage basin). This EA will investigate this option as the "preferred" alternative.

The Las Arenitas Mexicali II Wastewater Treatment Plant, pipeline and pump station would be sized to treat and convey 20.1 mgd (880 lps) to accommodate flows until the year 2014. While the design of the treatment plant is the same as proposed in the 1997 EA for El Choropo, a new pumping station would have to be added, and additional 15.9 km (9.9 mi) of pipeline would have to be installed, given the increase in distance to the new location for the wastewater treatment plant. In addition, emergency pumping equipment will be acquired to bypass flows and prevent discharges of raw sewage during collector and subcollector collapses, breaks, and repairs throughout the Mexicali I and II collection system.

Table 1-1. Population, Potable Water Demand And Wastewater Production Projections For The City Of Mexicali.

YEAR	POP.	ANNUAL GROWTH RATE %	AVERAGE PER CAPITA DEMAND L/Capita/Day (gpcd)	AVERAGE DEMAND		PRODUCTION (90% COVERAGE)							
						WASTEWATER AVG. (75% demand)		WASTEWATER MEXICALI I		POP.	WASTEWATER MEXICALI II		POP.
				L/S	mgd	L/S	mgd	L/S	mgd		L/S	mgd	
2000	567,830	2.44	418 (110)	2,747	62.70	1,854	42.32	980	22.37	376,320	0	0.00	
2001	581,231	2.38	415 (110)	2,792	63.73	1,885	43.01	980	22.37	376,320	0	0.00	
2002	594,483	2.28	410 (108)	2,821	64.39	1,904	43.46	980	22.37	376,320	0	0.00	
2003	607,562	2.20	405 (107)	2,848	65.00	1,922	43.88	1,300	29.67	499,200	622	14.21	239,002
2004	620,442	2.12	400 (106)	2,872	65.55	1,939	44.25	1,300	29.67	499,200	639	14.58	245,222
2005	633,099	2.04	395 (104)	2,894	66.05	1,953	44.59	1,300	29.67	499,200	653	14.91	250,925
2006	645,508	1.96	390 (103)	2,914	66.51	1,967	44.89	1,300	29.67	499,200	667	15.22	256,109
2007	657,643	1.68	385 (102)	2,930	66.88	1,978	45.14	1,300	29.67	499,200	678	15.47	260,256
2008	669,481	1.80	380 (100)	2,944	67.20	1,987	45.36	1,300	29.67	499,200	687	15.68	263,885
2009	680,998	1.72	375 (99)	2,956	67.47	1,995	45.54	1,300	29.67	499,200	695	15.87	266,995
2010	692,164	1.64	375 (99)	3,004	68.56	2,028	46.28	1,300	29.67	499,200	728	16.61	279,437
2011	703,051	1.57	375 (99)	3,051	69.64	2,059	47.01	1,300	29.67	499,200	759	17.33	291,619
2012	713,658	1.51	375 (99)	3,097	70.69	2,090	47.71	1,300	29.67	499,200	790	18.04	303,542
2013	723,981	1.45	375 (99)	3,142	71.71	2,121	48.41	1,300	29.67	499,200	821	18.74	315,206
2014	734,026	1.39	375(99)	3,185	72.70	2,150	49.07	1,300	29.67	499,200	850	19.40	326,352
2015	743,793	1.33	375 (99)	3,228	73.68	2,179	49.73	1,300	29.67	499,200	879	20.06	337,498
2016	753,286	1.26	375 (99)	3,269	74.61	2,207	50.36	1,300	29.67	499,200	907	20.69	348,125
2017	762,506	1.22	375 (99)	3,309	75.53	2,234	50.98	1,300	29.67	499,200	934	21.31	358,493
2018	771,458	1.17	375 (99)	3,348	76.42	2,260	51.58	1,300	29.67	499,200	960	21.91	368,602
2019	780,141	1.13	375 (99)	3,386	77.28	2,286	52.17	1,300	29.67	499,200	986	22.49	378,451
2020	788,564	1.08	375 (99)	3,422	78.11	2,310	52.72	1,300	29.67	499,200	1,010	23.05	387,782
2021	797,080	1.08	375 (99)	3,460	78.97	2,336	53.31	1,300	29.67	499,200	1,036	23.63	397,632
2022	805,689	1.08	375 (99)	3,497	79.82	2,360	53.88	1,300	29.67	499,200	1,060	24.20	407,222
2023	814,390	1.08	375 (99)	3,534	80.66	2,385	54.45	1,300	29.67	499,200	1,085	24.77	416,813
2024	823,185	1.08	375 (99)	3,573	81.55	2,412	55.05	1,300	29.67	499,200	1,112	25.38	426,922
2025	832,076	1.08	375 (99)	3,611	82.42	2,437	55.63	1,300	29.67	499,200	1,137	25.96	436,771

Table Provided by Border Environment Cooperation Commission

1.2 Statement of Project Purpose and Need

The purpose of the proposed project is to build a new wastewater treatment plant in the Las Arenitas, a pump station and force main, and to acquire emergency pumping equipment under the Mexicali II Project in order to provide an improved level of sanitation for Mexicali residents, to facilitate achieving the WLA for pathogens at the International Boundary, and to improve the overall water quality discharged to the New River.

1.3 Project Approvals and Permits

For a project to qualify for a Border Environmental Infrastructure Fund (BEIF) grant, EPA must ensure that any wastewater treatment plant discharging directly or indirectly to a body of water in the U.S. is designed and operated to achieve "U.S. norms." The preferred alternative will assure that no untreated wastewater from the Mexicali II area will flow into the New River.

The project will be reviewed and approved through the BECC process. BECC was established to help preserve, protect, and enhance the environment of the border region. In carrying out its mission, BECC works with the International Boundary and Water Commission (IBWC), the North American Development Bank (NADB), and others. BECC is responsible for certifying projects prior to implementation. To be certified, projects must meet certain criteria:

- All projects must fall under at least one of the BECC priority areas: water supply, wastewater treatment, municipal solid waste, or other related matters.
- All projects must be located within 100 km (62 miles) of the U.S./Mexican border or be found by the BECC, with the concurrence of the EPA and the Ministry of Environment, Natural Resources, and Fisheries (SEMARNAT) to remedy a transboundary human health or environmental problem.
- All applicants must provide information on the proposed project including: the problem to be resolved, a description of the proposed project, a program of project work tasks, a description of the community, project alternatives, and project justification. Project work tasks must be realistic in order to complete the project as planned by the applicant.
- Projects must conform to rights and obligations under applicable international treaties and agreements in which either the United States, Mexico, or both are parties (http://www.cocef.org/englishbecc.html).

In addition, BEIF requirements shall be met:

- Only water and wastewater infrastructure projects located within 100 kilometers (62 miles) of the U.S.-Mexico border will be considered for funding. Eligibility is based on a set of project selection criteria, as well as an assessment of a community's financial need.
- Projects must address an existing human health and/or ecological issue.
- Projects may be located in either Mexico or the United States, but must have a U.S.-side benefit.
- Only municipal infrastructure projects will be considered.
- Projects must be certified by the Border Environment Cooperation Commission (BECC).
- Projects must include adequate operations and maintenance provisions.
- For potable water projects, only water treatment plants and treated water distribution systems will be considered.
- Wastewater projects where treated water is discharged directly or indirectly into U.S.-side waters must target achievement of U.S. regulations for ambient water quality. However, compliance may be phased in over time.
- Priority will be given to projects with maximum funding from other sources and where BEIF funding is necessary to complete project financing. Preference will also be given to projects likely to have the most impact and ultimately benefit both sides of the border.

BEIF funds are targeted for communities that could not otherwise afford to develop and execute necessary infrastructure. For each project, the NADB performs an analysis of the community's need for grant funds, its capacity to assume debt and, most importantly, the ability of its residents to afford the costs associated with the project and the system as a whole. Taking these factors into consideration, the NADB puts together a financial package that ensures completion of a functional system at a cost affordable to the community. The amount of each award is based on this analysis and the availability of other sources of funding (http://www.nadb.org/english/program_service/beif/beif_frame.htm).

Section 2
Description of Proposed Action and Alternatives

2.1 Proposed Action and Alternatives

In December 1996 the "*Comisión Nacional Del Agua*" (CNA), the Mexican Federal Water Resources Agency, completed preparation of the update to the Master Plan for the improvements to water, wastewater and sanitation for the City of Mexicali, Baja California. Based on the above document, the Comisión Estatal de Servicios Publicos de Mexicali (CESPM) (the local public services agency), completed and submitted a Step I application to the BECC for certification of the sanitation program for the City of Mexicali. The sanitation program for the City of Mexicali has been designed to operate as three independent sewer collection and treatment systems: Mexicali I, Mexicali II, and Mexicali III. The BECC application only defined improvements to the Mexicali I and Mexicali II systems.

In combination, the Mexicali I and II projects are designed to improve and upgrade the wastewater collection, conveyance, and treatment facilities in the City of Mexicali. The purpose was to provide an adequate and reliable level of sanitation, and to improve the quality of the water discharged to the New River. Most of the Mexicali I projects have been completed. Wastewater generated in the Mexicali I area is collected by the sewer network and conveyed to the Zaragoza Wastewater Treatment Plant. However, the Mexicali II wastewater treatment plant portion has not been completed because of public opposition to the construction of a wastewater plant in El Choropo. Consequently, approximately 13.7 mgd (600 lps) of untreated wastewater enter the New River.

This section defines three alternatives related to the Mexicali II projects: Alternative 1 (the Preferred Alternative); Alternative 2 and the No Action Alternative. Alternative 2 described in this EA is similar to the Preferred Alternative described in this EA; however the site is in a different site location, called "Heriberto Jara." Both alternatives will discharge south of the New River Basin. Table 2-1 and 2-2 present the water quality parameters required for wastewater effluent in Mexico. Table 2-1 presents the maximum permissible levels for basic contaminants while Table 2-2 presents the maximum permissible levels for heavy metals and cyanide-containing compounds. The No Action Alternative will continue the discharge of raw sewage of 600 l/s (13.7 mgd or 15,342 AF/y) to the New River, thus violating the California Regional Water Quality Control Board's (CRWQCB) TMDL for pathogens and anticipated Salton Sea TMDL for nutrients.

Neither alternative would require construction of any structural improvements in the United States. The implementation of either alternative would result in the elimination of up to 880 lps (20. 1 mgd or 22,501 AF/y) of raw sewage flow into the New River (600 lps current raw sewage flow increasing to 880 lps projected raw sewage flow to the year 2014). Thus the water quality of the New River would improve as it flows into and through the United States.

Facultative waste stabilization ponds are proposed for both the Preferred Alternative and Alternative 2 (Figure 2-1). The low construction and operating costs of these ponds offer a significant financial advantage over other commonly used wastewater treatment methods. Typical equipment included in the design of a treatment train using facultative ponds, in either of the two proposed locations, consists of lining systems to control seepage due to the sandy substrate found in the area, inlet and outlet structures, hydraulic controls, floating dividers, and baffles. Typical organic loading values range from 15 to 80 kg/ha/d (13 to 71 lbs/acre/d). Typical detention times range from 20 to 180 days depending on the location. Effluent biochemical oxygen demand (BOD) $\leq$ 30 mg/L can be usually achieved while effluent Total Suspended Solids (TSS) may range from $\leq$ 30mg/L to more than 100 mg/L, depending on the algal concentrations and the design of discharge structures *(EPA Wastewater Technology Fact Sheet EPA 832-F-02-014).*

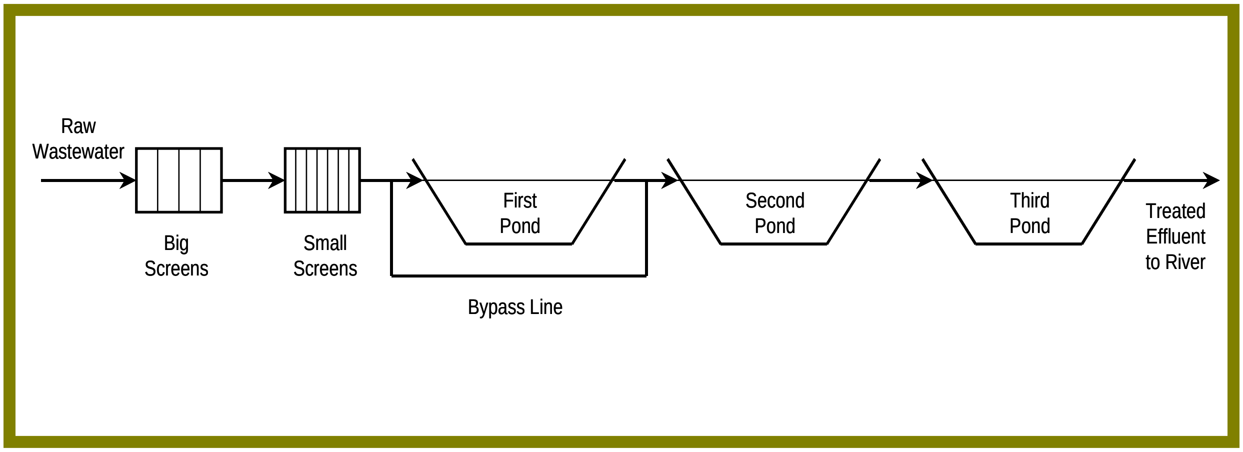
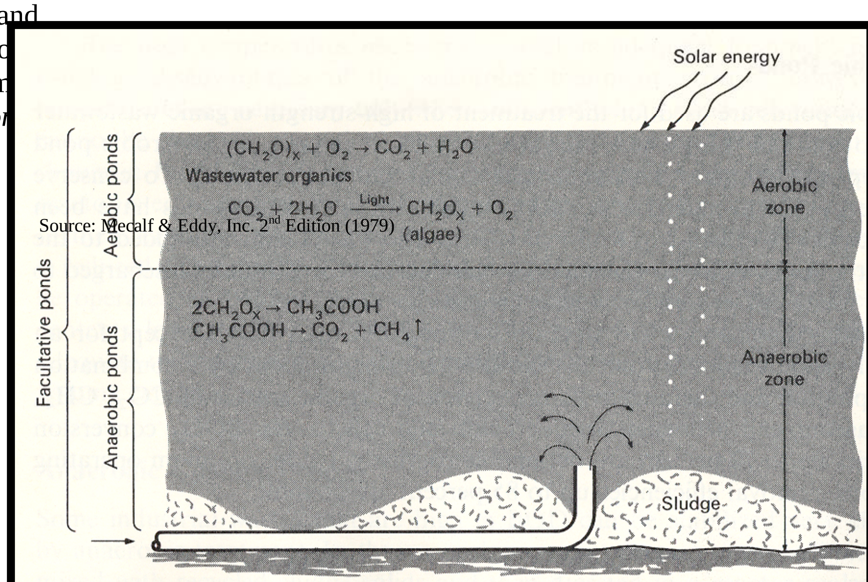


Figure 2-1. Schematic Representation of a Facultative Pond Wastewater Stabilization System.

The ponds can be operated in both series or in parallel, are usually 1.2 to 2.4 meters in depth and are not mechanically mixed or aerated. The wastewater is stabilized by a combination of aerobic, anaerobic and facultative bacteria. For cleaning, the ponds will have to be drained and the solids removed. Sludge handling and disposal frequency varies depending on the operation of the system. Sludge can also be removed by being dredged, however this tends to disturb the treatment process. Ultimate disposal of the sludge is to transport it to a properly certified sludge disposal site or land apply at agronomic rates. Figure 2-2 illustrates the three zones found in a facultative pond:

- The aerobic surface zone where aerobic bacteria and algae exist in a symbiotic relationship,
- The anaerobic bottom zone in which accumulated solids are actively decomposed by anaerobic bacteria, and
- A third zo … bic, in which the decom … *& Eddy, Inc.,* *2nd Editio…*



Source: Mecalf & Eddy, Inc. 2nd Edition (1979)

Figure 2-2. Schematic Representation of a Facultative Pond.

2.1.1 Preferred Alternative

The preferred alternative is the treatment of wastewater generated by the Mexicali II area in Las Arenitas. The wastewater generated from Mexicali II will be collected and conveyed to a pump station that will pump the wastewater into the proposed Mexicali II Wastewater Treatment Plant in Las Arenitas. This plant is located farther to the south along the San Felipe Highway so that the treated effluent would flow south out of the New River drainage basin into the Hardy River. This treatment plant and conveyance system (pump station and force main) would be designed to treat approximately 880 liters per second (lps) (20.1 million gallons per day), and would likely be expanded in the future to allow for anticipated growth. Table 2-3 provides estimated costs for the Preferred Alternative and Alternative 2.

For the preferred alternative, pumps would be designed to operate at the higher head required to account for friction losses generated by the greater distance to the new location of the wastewater treatment plant. The associated pipeline would be 26 km long. Figure 2-3 shows the location and photos of the site for the Preferred Alternative.

Emergency pumping equipment would also be purchased to assure that during repairs of collapsed sewer lines, wastewater can be directed to a wastewater treatment facility.

Table 2-1. Maximum Permissible Levels For Basic Contaminants in Mexico.

MAXIMUM PERMISSIBLE LEVELS FOR BASIC CONTAMINANTS																				
PARAMETERS	**RIVERS**						**NATURAL AND ARTIFICIAL RESERVOIRS**				**COASTAL WATERS**						**SOIL**			
(mg/L except when specified)	**Use for Agricultural Irrigation (A)**		**Urban Public Use (B)**		**Protection of Aquatic Life (C)**		**Use for Agricultural Irrigation (B)**		**Urban Public Use (C)**		**Fishing, Transportation and Other Uses (A)**		**Recreation (B)**		**Estuaries (B)**		**Use for Agricultural Irrigation (A)**		**Natural Wetlands (B)**	
	M.A.	D.A.	M.A.	D.A.	M.A.	D.A.	M.A.	D.A.	M.A.	D.A.	M.A.	D.A.	M.A.	D.A.	M.A.	D.A.	M.A.	D.A.	M.A.	D.A.
Temperature ^{o}C (1)	N/A	N/A	40	40	40	40	40	40	40	40	40	40	40	40	40	40	N/A	N/A	40	40
Grease and Fats (2)	15	25	15	25	15	25	15	25	15	25	15	25	15	25	15	25	15	25	15	25
Suspended Matter (3)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Settleable Solids (ml/L)	1	2	1	2	1	2	1	2	1	2	1	2	1	2	1	2	N/A	N/A	1	2
Total Suspended Solids	150	200	75	125	40	60	75	125	40	60	150	200	75	125	75	125	N/A	N/A	75	125
BOD_5	150	200	75	150	30	60	75	150	30	60	150	200	75	150	75	150	N/A	N/A	75	150
Total Nitrogen	40	60	40	60	15	25	40	60	15	25	N/A	N/A	N/A	N/A	15	25	N/A	N/A	N/A	N/A
Total Phosphorous	20	30	20	30	5	10	20	30	5	10	N/A	N/A	N/A	N/A	5	10	N/A	N/A	N/A	N/A

(1) Instantaneous

(2) Representative Sample Weighted Average

(3) Not detected according to the Standard Method defined by NMX-AA-006.

D.A. = Daily Average; M.A. = Monthly Average

N/A = Not applicable.

(A), (B) and (C): Type of Receiving Body of Water according to the *Ley Federal de Derechos*.

Table 2-2. Maximum Permissible Levels For Heavy Metals And Cyanides in Mexico.

MAXIMUM PERMISSIBLE LEVELS FOR HEAVY METALS AND CYANIDES																				
PARAMETERS (*)	**RIVERS**						**NATURAL AND ARTIFICIAL RESERVOIRS**				**COASTAL WATERS**						**SOIL**			
(mg/L)	**Use for Agricultural Irrigation (A)**		**Urban Public Use (B)**		**Protection of Aquatic Life (C)**		**Use for Agricultural Irrigation (B)**		**Urban Public Use (C)**		**Fishing, Transportation and Other Uses (A)**		**Recreation (B)**		**Estuaries (B)**		**Use for Agricultural Irrigation (A)**		**Natural Wetlands (B)**	
	M.A.	D.A.	M.A.	D.A.	M.A.	D.A.	M.A.	D.A.	M.A.	D.A.	M.A.	D.A.	M.A.	D.A.	M.A.	D.A.	M.A.	D.A.	M.A.	D.A.
Arsenic	0.2	0.4	0.1	0.2	0.1	0.2	0.2	0.4	0.1	0.2.	0.1	0.2	0.2	0.4	0.1	0.2	0.2	0.4	0.1	0.2
Cadmium	0.2	0.4	0.1	0.2	0.1	0.2	0.2	0.4	0.1	0.2	0.1	0.2	0.2	0.4	0.1	0.2	0.05	0.1	0.1	0.2
Cyanides	1.0	3.0	1.0	2.0	1.0	2.0	2.0	3.0	1.0	2.0	1.0	2.0	2.0	3.0	1.0	2.0	2.0	3.0	1.0	2.0
Copper	4.0	6.0	4.0	6.0	4.0	6.0	4.0	6.0	4	6.0	4	6.0	4.0	6.0	4.0	6.0	4	6.0	4.0	6.0
Chromium	1	1.5	0.5	1.0	0.5	1.0	1	1.5	0.5	1.0	0.5	1.0	1	1.5	0.5	1.0	0.5	1.0	0.5	1.0
Mercury	0.01	0.02	0.005	0.01	0.005	0.01	0.01	0.02	0.005	0.01	0.01	0.02	0.01	0.02	0.01	0.02	0.005	0.01	0.005	0.01
Nickel	2	4	2	4	2	4	2	4	2	4	2	4	2	4	2	4	2	4	2	4
Lead	0.5	1	0.2	0.4	0.2	0.4	0.5	1	0.2	0.4	0.2	0.4	0.5	1	0.2	0.4	5	10	0.2	0.4
Zinc	10	20	10	20	10	20	10	20	10	20	10	20	10	20	10	20	10	20	10	20

(*) Measured as total concentration.

D.A. = Daily Average; M.A. = Monthly Average

N/A = Not applicable.

(A), (B) and (C): Type of Receiving Body of Water according to the *Ley Federal de Derechos*.

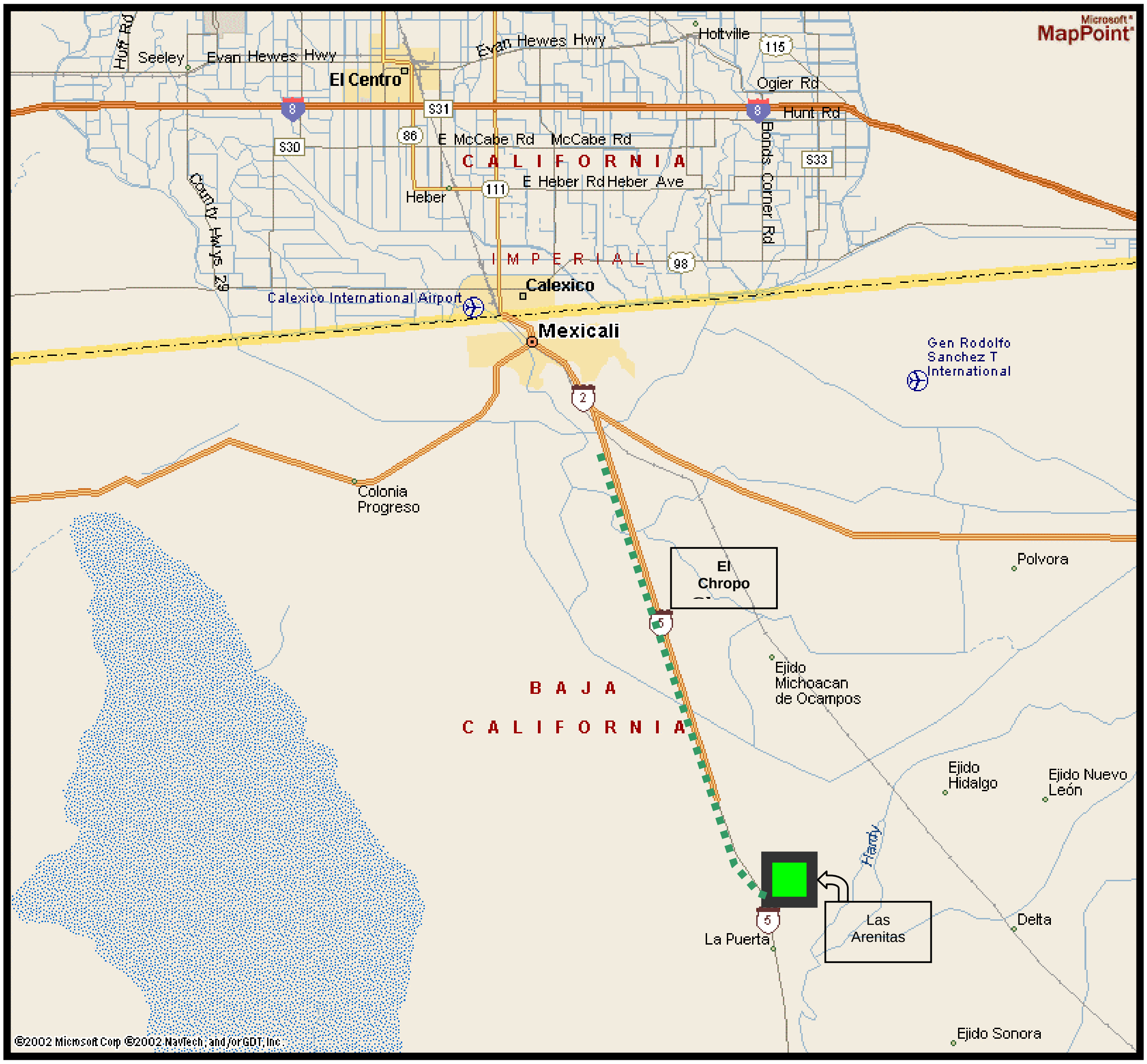


Figure 2-3. Preferred Alternative (Las Arenitas)

2.1.2 Alternative 2

This alternative is similar to the Preferred Alternative described in Section 2.1.1. However, the wastewater generated from Mexicali II will be collected and conveyed to a pump station, which will pump the wastewater into a proposed Mexicali II Wastewater Treatment Plant located in an area known as Heriberto Jara. This proposed site is northwest of the Preferred Alternative. The treated effluent would flow south out of the New River drainage basin. The ultimate capacity of the wastewater treatment plant is identical to that of the Preferred Alternative and facultative stabilization ponds are also proposed as the method for treatment. Although this conveyance pipeline is shorter (20 km vs. 26 km), the pumping and land costs are higher. Table 2-1 presents the costs of both alternatives and Figure 2-4 illustrates the location of Alternative 2. A wastewater treatment plant in the Heriberto Jara location costs over $2 million dollars more than the Las Arenitas location because of pumping and land costs.

Table 2-3. Estimated Cost of the Preferred Alternative vs. Alternative 2.

Alternative	Cost Estimates in 1000 Mexican Pesos						Total Construction Cost (May 1, 2003 USD)
	Flow	Construction Cost		Land Cost	Pumping Station	Total Construction Cost	
		Plant	Pipeline				
Mexicali II in Las Arenitas - Facultative Ponds (1st phase)	880 lps (20.1 mgd)	158,940	178,327	54,450	34,000	**425,718**	**$41,552,106**
Mexicali II in Heriberto Jara - Facultative Ponds (1st phase)	880 lps (20.1 mgd)	168,940	160,000	73,205	47,000	**449,145**	**$43,838,698**

NOTE:

Land Cost 9.00 pesos ($0.88 USD) per m^2. Area Las Arenitas (Total Area = 605 Ha).
Length of transmission pipeline 26 Km

Land cost 11.00 pesos ($1.07 USD) per m^2. Area Heriberto Jara (Total Area = 605 Ha).
Length of the transmission pipeline 20 Km
Energy cost 0.831 pesos ($0.08 USD) per Kw-Hr.

This table is provided by BECC

2.1.3 No Action Alternative

The No Action Alternative will result in a continuation of sewage flowing from the Mexicali II service area into the New River drainage at increasing levels as the residential, commercial, and industrial wastewater production increases. This alternative would result in a substantial worsening of the future conditions due to a significant increase in wastewater production. The No Action alternative will result in continued violation of the RWQCB New River TMDL for pathogens and will likely exceed the anticipated Salton Sea TMDL for nutrients.

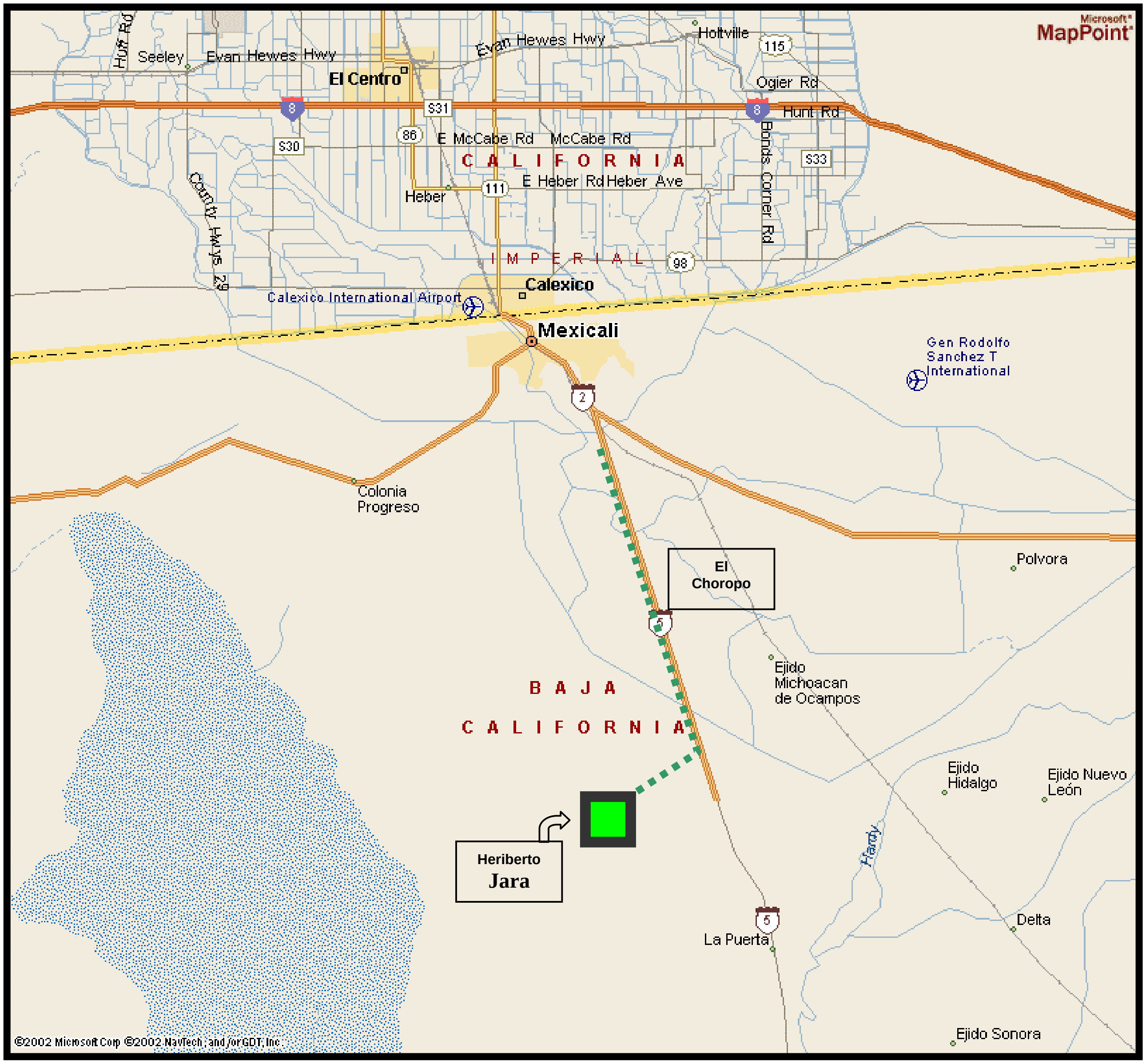


Figure 2-4. Alternative 2 (Heriberto Jara).

Section 3
Affected Environment

3.1 Water Resources and Quality

The Lower Colorado River Basin covers approximately 13 million acres (20,000 square miles) (CRWQCB, 1994) and includes the Salton Sea, a landlocked, saline lake into which the New River and the Alamo River discharge. Colorado River water is diverted for agricultural, municipal, and industrial uses in the Basin. The New River flows northward, collecting agricultural drainage water and domestic and industrial wastewater in the Mexico and the United States. It travels through the Mexicali Valley and the City of Mexicali, crossing the border into the Imperial Valley at Calexico, California, providing drainage for agricultural fields and taking treated wastewater from the cities of Brawley and Westmorland, emptying into the Salton Sea.

A prehistoric lake that has been inundated many times, the Salton Sea lies 226 feet below sea level in the Colorado desert, one of the hottest regions in the U.S. The present Salton Sea was created in 1905 with the failure of a diversion structure bringing Colorado River water for irrigation to the Imperial Valley. The river continued to flow into the Salton Sink for 16 months. Once the Colorado was redirected back to its original course, and an irrigation district formed, the Salton Sea was designated an agricultural sump, to receive agricultural drainage water, by Congress in 1922. In addition, acreage within the Sea was set aside as a National Wildlife Refuge, now called the Sonny Bono Wildlife Refuge *(U.S. Fish & Wildlife Service, December 1997)*.

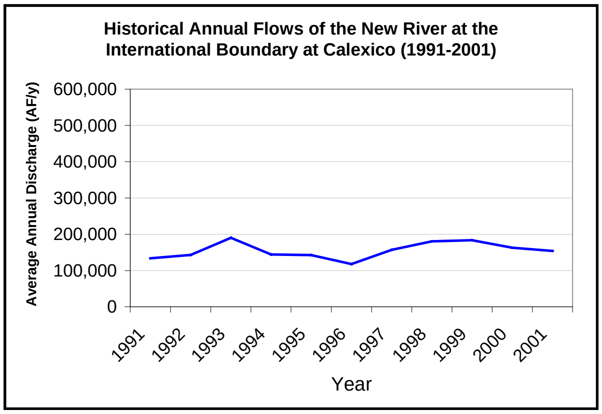
The Salton Sea has a salinity of 44 parts per thousand (ppt), approximately 25 percent saltier than the ocean. Nutrients (nitrogen and phosphorous), selenium and pesticides and other contaminants enter the Salton Sea from agricultural runoff and municipal discharges, the largest of which is the City of Mexicali.

Restoration efforts to control the levels of salinity and elevation at the Salton Sea are currently being evaluated (Salton Sea Draft Alternatives Report, December 2000). Another project, supported by the Citizens' Congressional Task Force on the New River has constructed wetlands along the riparian corridor to improve the quality of water in the New River. The water quality parameters targeted for improvement are reduction of bacteria and sediment, with associated pesticides. There is a concern that the nutrient load carried by the New River is accelerating the degradation of water quality in the Salton Sea.

3.1.1 Water Flows

The average annual flow record of all the data from 1991 through 2001 in the New River, measured near the International Boundary at Calexico, is approximately 214 cfs [0.17 AF)](Fig. 3-1) and approximately 638 cfs [0.52 AF] at the outlet near Westmorland (Fig. 3-2). The increase in flow largely made up of agricultural drainage from the Imperial Valley into the New River with ultimate discharge into the Salton Sea.

Figure 3-1. International Boundary Flow Charts.



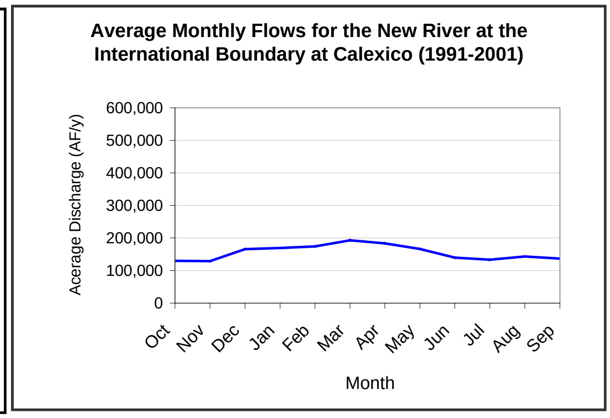
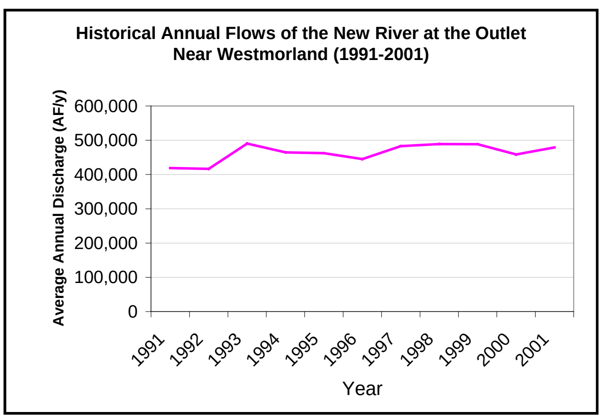
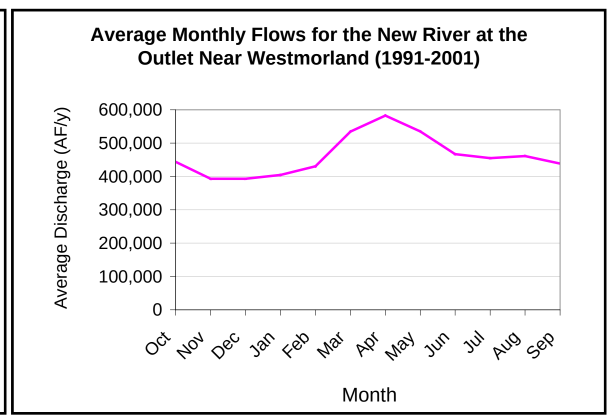


Figure 3-2. Outlet Flow Charts.





3.1.2 Water Quality

The New River, part of the Salton Sea watershed, carries urban runoff, municipal wastes, industrial wastes and agricultural runoff to the Salton Sea at an average annual flow rate ranging between 553 cfs (400,515 AF/y) and 705 cfs (510,635 AF/y). Sediments and associated organochlorine pesticides come primarily from agricultural drainage from the Imperial and Mexicali Valley. Selenium is a contaminant in Colorado River water, and is found in all rivers and agricultural drains throughout the Mexicali/Imperial Valley area. Volatile Organic Compounds (VOCs) are mostly found at detection level in the New River at the border, as a result of the discharge of water from industrial processes in the City of Mexicali. Nutrients and pathogens are associated with municipal, commercial and industrial discharge, and with agricultural runoff from both sides of the border.

The beneficial uses of the New River as identified by the Federal Clean Water Act and the State Porter-Cologne Water Quality Control Act are:

- Freshwater Replenishment
- Industrial Surface Water Supply
- Preservation of Rare, Threatened, or Endangered Species
- Water Contact Recreation
- Non-Contact Water Recreation
- Warm Freshwater Habitat
- Wildlife Habitat

Water quality in the New River at the International Boundary is monitored monthly by the California Regional Water Quality Control Board, Colorado River Basin Region (CRWQCB). The primary objectives for the sampling program are to:

- Monitor and record water quality changes in the New River, as indicated by key indicator parameters;
- Help determine the effects (on the water quality at the International Boundary) of the infrastructure improvement projects in the City of Mexicali, B.C.;
- Help determine the extent of New River pollution and compliance with water quality standards and treaty agreements;
- Obtain information that may be used in the development of more detailed studies, including Total Maximum Daily Loads for the New River *(CRWQCB website)*.

The relationship of water quality to the support wildlife habitat at the Salton Sea is the essential environmental issues that must be addressed as part of any Salton Sea restoration project. Salton Sea water is hypersaline and eutrophic. The salinity level at the Salton Sea is 44 parts per thousand (ppt), approximately 25 percent saltier than ocean water. This is the result of the combination of the fact that water flowing into the sea adds several million tons of salt a year and the high evaporation rate of water the hot desert climate within which it is located *(Salton Sea Authority Water Quality Sea Facts)*.

In addition, the Salton Sea is highly eutrophic. Eutrophication, the condition that accelerates biological growth in a water body, is caused by the inflow of agricultural drainage and municipal effluent containing high levels of nutrients, especially nitrogen and phosphorus, to the sea, which has no outlet. High levels of nutrients encourage algal blooms. Algae grow at an accelerated rate, producing oxygen during the day, but using it at night. The oxygen demand of the algae lowers the amount of oxygen available for other organisms, which is especially critical for fish populations. Low or no oxygen levels cause fish to die in large numbers. Decaying fish and rapid algal life cycling release nutrients to the Sea, keeping the nutrient levels high *(Salton Sea Authority Website)*.

Recent studies indicate that phosphorus the limiting nutrient in the sea (CRWQCB, 2003). The most important first step is to reduce phosphorus inflows to the Sea. Other steps that might help include installation of tertiary treatment for all municipal wastewater treatment plants and initiation of Best Management Practices (BMPs) on farms, fish farms, and feed lots to reduce phosphorus runoff. A final step that may help is to introduce fish harvesting to reduce the phosphorus recycling from dead fish. But reduction of phosphorus sources must accompany any of these efforts.

The establishment of water quality standards and Total Maximum Daily Load (TMDLs) allocations for point and nonpoint discharges to public water bodies in the Salton Sea Basin is under active development and implementation by the CRWQCB, CRB. The development and adoption of

TMDLs for the New River and Salton Sea will require that the amount of nutrients, the degree of salinity and other contaminants that flow into the sea be much reduced.

3.1.3 Human Health

Only boat fishing is permitted in the Salton Sea. Health warnings suggest that adults should limit their consumption of fish from the Salton Sea not to exceed 5 ounces per month. Children and pregnant women should not consume fish from the Salton Sea. The New River and the nearby Alamo River pose numerous human health hazards. Entering the water or consuming fish from the tributaries is not recommended *(U.S. Fish And Wildlife Service)*.

The Agency for Toxic Substances and Disease Registry (ATSDR) provided an analysis of threats to public health posed by contaminants and pathogens found in the New River. A report was requested from the Imperial County and prepared by ATSDR on February 28, 1996. The report concluded that the New River poses a potential public health hazard and recommended that the safest course is "*not to consume any water or wildlife from the New River*"*(ATSDR, 1996)*. The report also indicated that area residents could be exposed to fecal streptococci, and other pathogens through contact with contaminated surface water and foam. Metal, several pesticides and PCBs were also detected in the New River that exceeded regulatory standards. Fish from the New River are also contaminated with metals, pesticides, PCBs and VOCs; fish from the Salton Sea are contaminated with metals and pesticides.

3.1.4 Environment

Issues of concern for water quality in the New River include the following agents that can be elevated to higher trophic levels and bioaccumulated in fish, birds and through the food chain:

- Metals such as selenium, arsenic, iron, manganese, and zinc.
- Pesticides and PCBs to include aldrin, chlordane, heptachlor epoxide, DDT and its metabolites DDD and DDE.
- VOCs

Although fish die-offs were commonly reported during the summer throughout the last century, during the 1990s there were several severe episodes of mortality in bird populations at the Salton Sea. In 1992, 150,000 eared grebes at the Sea died of as-yet unidentified causes. In 1996, over 4,000 birds of many species died, including more than 1,400 endangered California brown pelicans died of avian botulism. The toxin was found in Salton Sea fish populations, prey species for the birds. In 1997, an entire nesting colony of double crested cormorants died of Newcastle disease, a poultry virus.

3.2 Biological Resources

3.2.1 Terrestrial Resources

3.2.1.1 Vegetation Communities

Vegetation in the project vicinity, which includes the proposed plant locations in Las Arenitas, and Heriberto Jara, Baja California, Mexico, and adjacent to the New River in Baja California and California, is generally comprised of the Sonoran Creosote Bush Scrub, Sonoran wash scrub, and Colorado riparian scrub vegetation communities. The landscape in the immediate vicinity of the proposed plant locations in Las Arenitas and Heriberto Jara consist of Sonoran Creosote Bush Scrub interspersed with irrigated agricultural fields and irrigation canals. Other land within the project area is either under intensive cultivation, or developed to support roads, canals, and drains or residential communities. A brief description of the natural plant communities occurring in the project vicinity is presented below.

Sonoran Creosote Bush Scrub

Prior to the agricultural development of the Mexicali and Imperial Valleys, the landscape vegetation was generally characterized by Sonoran Creosote Bush Scrub, the most widespread vegetation type of the Sonoran and Colorado Deserts. This vegetation community is dominated by creosote bush (*Larrea tridentata*) and burro-weed (*Ambrosia dumosa*). Typical community characteristics include low species diversity and dispersed occurrence of shrubs. Within the project area, creosote bush scrub occurs only in areas that have not been converted to other land uses such as agriculture or residential developments. Remnant stands of this community occur along the flood channel of the New River, adjacent to the riparian corridor. Small isolated patches also may occur at the edge of agricultural fields.

Sonoran Wash Scrub

Intermittent streams (washes) or arroyos, and the New River riparian corridor support stands of Sonoran wash scrub, a tree and shrub-dominated community. Water associated species (phreatophytes) occur where suitable surface or subsurface water is available. Typical species include Paloverde (*Cercidium* sp.) and mesquite (*Prosopis* sp.), and thickets of salt cedar (*Tamarisk chinensis*) an introduced, invasive weed. The riparian corridor of the New River is generally dominated by dense stands of salt cedar, with only isolated individuals of paloverde and mesquite.

Transmontane Freshwater Marsh

Drainage ditches, irrigation canals, and ponds may support elements of transmontane freshwater marsh. Typically these plant communities are composed of emergent species, including cattails (*Typha* sp.*)*, rush, and a variety of herbaceous plants, such as arrowweed (*Pluchea purpurascens*), and curly dock (*Rumex crispus).* The presence of these plant communities can be highly variable and is sensitive to seasonal changes in irrigation return flows, drainage maintenance, and application of herbicides for weed control.

Ruderal Vegetation

The remaining land is under cultivation or consists of disturbed areas (road edges, fallow fields, and drainage channels) that support ruderal vegetation comprised of non-native weedy species, including introduced annual grasses and forbs.

3.2.1.2 Wildlife Habitats

Wildlife habitats in the project area are greatly limited by the conversion of the desert plant communities to agricultural, residential, and commercial land uses. Native wildlife habitat is virtually extirpated in the project area. Remnant stands of creosote bush scrub may support some wildlife uses; however, the small and isolated nature of these stands greatly limits the habitat uses and values. Wildlife use areas include both terrestrial areas (farm fields, agricultural field borders, and remnant native plant community area) and aquatic habitats, canals, drains, and the New River riparian corridor.

Farm Fields and Borders

Small mammals, including cottontail, jackrabbit, field mice, moles, gopher, and round-tailed ground squirrels use farm fields, fallow areas, and borders. Reptiles such as western whiptail, side-blotch, and desert spiny-tailed lizards can also be found in fallow areas and field borders.

3.2.2 Aquatic Resources

3.2.2.1 Canals, Irrigation Laterals, and Drains

Emergent vegetation and sufficient drainage flows support softshell turtles, bullfrog, and common leopard frog. Small clams, aquatic invertebrates, and various small fish use flowing water conditions in canals, laterals, and drains. Numerous species of fish can occur in canals and drains throughout the Imperial Valley. Fish, eggs, and larvae can be transported through the irrigation system; therefore, the actual distribution is highly variable. Additionally, irrigation demands periodically result in higher flows or alternatively, low flow or dry conditions in canals and drains.

3.2.3 Sensitive Species/Habitats

Sensitive plant and wildlife species are subject to regulations under the authority of federal and state agencies. The U.S. Fish and Wildlife Service (USFWS) and the California Department of Fish and Game (CDFG) identify sensitive species that are listed in the Natural Diversity Data Base (NDDB). Federal and State lists of species officially listed or proposed as threatened or endangered are subject to permit restrictions regulated under Sections 7 and 10(a) of the federal Endangered Species Act. In addition, the California Rare Species (plants only), California Fully Protected (animals only), California Special Animal and California Species of Special Concern are also tracked by the database. Biological data regarding the vulnerability and threats to federal Candidate Species are collected by the USFWS to support a proposal for listing of species. While not afforded protection under the Endangered Species Act of 1973, as amended, "Special animals" is a broad term referring to all vertebrate and invertebrate species of concern to the NDDB.

3.2.3.1 Habitats

Sensitive habitats are those that are considered rare within the region by the County of Imperial (1993a; 1993b) and the CDFG (Holland, 1986). No special habitats are known or expected to occur in the project area due to the conversion of land to other uses, and highly disturbed nature of the remnant native plant habitats.

3.2.3.2 Plants

The Open Space and Conservation Element of the Imperial County General Plan identifies 28 sensitive plant species occurring in the county. None of these species or their habitat is known or expected to occur in areas affected by the project alternatives. The potential for occurrence of the sensitive plants is very low due to the highly disturbed nature of the landscape and low amounts of native plant habitat in the New River riparian corridor.

3.2.3.3 Wildlife

Numerous sensitive wildlife species are known or are expected to occur in the Imperial Valley. The Open Space and Conservation Element of the Imperial County General Plan identifies 4 species of reptiles, 10 birds, and 4 mammals with sensitive status occurring in the county (Imperial County, 1993). The Salton Sea, wetlands near the outlets of the New and Alamo Rivers, and agriculture fields support a variety of seasonal and resident birds. These areas serve as a major stopover on the Pacific Flyway, as neotropical species and waterfowl forage and rest during seasonal migrations. Most of these species move about open water, wetlands, and farm fields during migration periods. Migrating species can occur in the project areas when suitable foraging habitats are present.

The burrowing owl is a CDFG "Species of Special Concern" and "Audubon Blue List Special Concern Bird Species" that is widely distributed in the Imperial Valley. Burrowing owls can forage in all agriculture fields. The owls nest in abandoned ground squirrel burrows typically located in the berms of irrigation canals, laterals, and banks of agricultural drains.

Table 3-1 presents a list of endangered and other special status animal species known to occur in the vicinity of the lower Colorado River, the Imperial Valley, and the International Border area (California Department of Fish and Game State and Federally Listed Endangered and Threatened Animals of California, April 2003; CH2M HILL, 2002; USFWS correspondence, May 2003; SEDUE Gaceta Ecológica. Vol.III No.15. May, 1991; and NOM-ECOL-059/1994). The species identified in Table 3-1 as receiving protection in Mexico are only those that would be expected to occur in or near Mexicali, Mexico.

TABLE 3-1
Endangered and Other Special Status Animal Species in the Lower Colorado River area of the United States and Mexico
Mexicali II EA

COMMON NAME	SCIENTIFIC NAME	FEDERAL STATUS [a]	STATE STATUS [a]	MEXICAN STATUS [a]	HABITAT [b]
REPTILE AND AMPHIBIANS					
Colorado River toad	*Bufo alvarius*	-	CSC	-	D, A
Lowland leopard frog	*Rana yavapaiensis*	SC	AWC	-	W,A
Northern leopard frog	*Rana pipiens*	-	CSC, AWC	-	W,A
Relict leopard frog	*Rana onca*	-	AWC	-	W,A
Sonoran mud turtle	*Kinosternon sonoriense*	-	CSC	-	A
Desert tortoise	*Gopherus agassizzi*	FT/CH	CT	-	D
BIRDS					
American peregrine falcon	*Falco peregrinus anatum*	DM	CE/FP, AWC	MT	G

TABLE 3-1
Endangered and Other Special Status Animal Species in the Lower Colorado River area of the United States and Mexico
Mexicali II EA

COMMON NAME	SCIENTIFIC NAME	FEDERAL STATUS [a]	STATE STATUS [a]	MEXICAN STATUS [a]	HABITAT [b]
Arizona Bell's vireo	*Vireo bellii arizonae*	-	CE	-	R
Bald eagle	*Haliaeetus leucocephalus*	FT/PD	CE/FP, AWC	MRE	A,W
Burrowing owl	*Athene cunicularia*	SC	CE/FP, AWC	-	Ag
California black rail	*Laterallus jamaicensis coturniculus*	-	CT/FP, AWC	-	W
California brown pelican	*Pelecanus occidentalis californicus*	FE	CE/FP	-	A,W
California least tern	*Sterna antillarum browni*	PE	-	-	A,W
Clark's grebe	*Aechmophorus clarkii*	-	AWC	-	A
Crissal thrasher	*Toxostoma crissale*	-	CSC	-	D
Elf owl	*Micrathene whitneyi*	-	CE	-	D
Fulvous whistling-duck	*Dendrocygna bicolo*	SC	CSC	-	W
Gila woodpecker	*Melanerpes uropygialis*	-	CE	-	R
Gilded northern flicker	*Colaptes auratus chrysoides*	-	CE	-	R
Golden eagle	*Aquila chrysaetos*		CSC/FP	MRE	G
Greater sandhill crane	*Grus canadensis tadiba*	-	T/FP	-	Ag, W
Harris hawk	*Parabuteo unicinctus*	-	CSC	-	R
Large-billed savannah sparrow	*Passerculus sandwichensis rostratus*	S	-	-	R
Least Bell's vireo	*Vireo bellii pusillus*	FE/CH		-	R
Least bittern	*Ixobrychus exilis*	SC	CSC, AWC	-	R
Mountain plover	*Charadrius montanus*	PT		-	
Reddish egret	*Egretta rufescens*	SC	-	MT	W
Southwestern willow flycatcher	*Empidonax traillii extimus*	FE	CE/AWC	-	R
Summer tanager	*Piranga rubra*	-	CSC	-	R

TABLE 3-1
Endangered and Other Special Status Animal Species in the Lower Colorado River area of the United States and Mexico
Mexicali II EA

COMMON NAME	SCIENTIFIC NAME	FEDERAL STATUS [a]	STATE STATUS [a]	MEXICAN STATUS [a]	HABITAT [b]
Swainson's hawk	*Buteo swainsoni*	-	CT, AWC	-	R, Ag
Vermilion flycatcher	*Pyrocephalus rubinus*	-	CSC	-	R
Western yellow-billed cuckoo	*Coccyzus americanus*	FC	CE, AWC	-	R
Willow flycatcher	*Empidonax traillii*	-	CE	-	R
Yellow warbler	*Dendroica ptechia*	-	CSC	-	R
Yuma clapper rail	*Rallus longirostris yumanensis*	FE	CT/FP	MRE	W
MAMMALS					
Allen's big-eared bat	*Idionycteris (=Plecotus)phyllotis*	SC	CSC, AWC	-	G
Big free-tailed bat	*Nyctinomops macrotis*	-	CSC	-	G
Cave myotis	*Myotis velifer brevis*	SC	CSC	-	G
California leaf-nosed bat	*Macrotus californicus*	SC	AWC, CSC	-	G
Greater western mastiff	*Eumops perotis californicus*	SC	AWC, CSC	-	G
Jaguar	*Panthera onca*	FE	-	-	G
Mexican long-tongued bat	*Choeronycteris mexicana*	SC	CSC	-	G
Occult little brown bat	*Myotis lucifugus occultus*	S	CSC	-	G
Pale Townsend's big-eared bat	*Corynorhynus townsendii pallescens*	SC	CSC	-	G
Pallid bat	*Antrozous pallidus*t	SC	-	-	G
Red bat	*Lasiurus blossevilli*	-	AWC	-	G
Spotted bat	*Euderma maculatum*	-	AWC	-	G
Spotted bat	*Euderma maculatum*	-	AWC	-	G
Colorado River hispid cotton rat	*Sigmodon arizonae plenus*	-	CSC	-	Ag, R
Nelson's bighorn sheep	*Ovis canadensis nelsoni*	BLMSS	-	-	D
Palm Springs ground squirrel	*Spermophilus tereticaudus chlorus*	FC	-	-	D

TABLE 3-1
Endangered and Other Special Status Animal Species in the Lower Colorado River area of the United States and Mexico
Mexicali II EA

COMMON NAME	SCIENTIFIC NAME	FEDERAL STATUS [a]	STATE STATUS [a]	MEXICAN STATUS [a]	HABITAT [b]
Peninsular bighorn sheep	*Ovis canadensis*	FE	-	MSP	D
Ringtail	*Bassariscus astutus*	-	FP	-	R
Yuma hispid cotton rat	*Sigmodon hispidus eremicus*	SC	CSC	-	Ag, R
FISH					
Razorback sucker	*Xyrauchen texanus*	FE/CH	CE	-	A
Colorado squawfish	*Ptychocheilus lucius*	FE/CH	CE	-	A
Bonytail	*Gila elegans*	FE/CH	CE	-	A
Desert pupfish	*Cyprinodon macularius*	FE	CE	-	A
Pierson's milk-vetch	*Astralagus magdalenae* var. *perisonii*	PT		-	D

[a]Status Codes:
SC: Species of Concern
CSC: California Species of Special Concern
AWC: Arizona Wildlife of Concern
CE: California endangered
CH: Critical habitat
CT: California threatened
FE: Federally endangered
FT: Federally threatened
PT: Proposed federally threatened
PD- Proposed for federal de-listing
FC: Proposed candidate for federal listing
FP: California Fully Protected
DM: Delisted – monitored
BLMSS: Bureau of Land Management Sensitive Species
MSP- Listed as Special Protection in Mexico
MRE – Listed as Risk of Extinction in Mexico
MT- Listed as Threatened in Mexico
[b] Habitat Codes
A: Aquatic
Ag: Agricultural fields
D: Desert
G: Generalist at this level and/or requires specific
Microhabitat to persist in area
R: Riparian
W: Wetland

Because of the highly disturbed nature, it is not likely that any of the species listed in Table 3-1 would occur in the project areas at the proposed plant sites in Las Arenitas and Heriberto Jara, Baja California, Mexico and along the New River in Mexico and California.

The following section discusses the potential presence of listed endangered, threatened species, and sensitive species occurring in the southwest desert area near the lower Colorado River and at the Salton Sea. For a further discussion on the species found in Mexico, please refer to the *Manifestación de Impacto Ambiental: Modalidad Particular; Sector Hidráulico para el Proyecto de Saneamiento de Mexicali.*

Listed Endangered Species (11 Species)

Brown pelican (Pelecanus occidentalis)

The California brown pelican forages on fish resources at the Salton Sea and at Finney-Ramer Lakes Wildlife Management Area north of Brawley. Breeding has been observed at the Salton Sea by a small number of birds (6 pairs of fewer.) Brown pelicans did not nest at the sea in 1999 (Shuford et al. 2000.) Brown pelicans that have nested at the Salton Sea represent less than 1 percent of the California breeding population (Johnsgard, 1993) and a far smaller percentage of the subspecies' entire population. Depending on the degree to which the fish population declines, brown pelicans might not nest at the Salton Sea again in the future. Because of the small number of birds that have nested at the sea and the infrequency of nesting, the impact associated with the potential loss of future breeding opportunities for brown pelicans at the Salton Sea would be minor (CH2M HILL, 2002).

California least tern (Sterna antillarum browni)

The California least tern nest on coastal beaches and estuaries near shallow waters. The terns prefer open areas where they have good visibility for long distances to see the approach of both ground and avian predators. The substrate is usually sand or fine gravel and can be mixed with shell fragments. It is not likely that California least terns would occur within the New River.

Least Bell's vireo (Vireo bellii pusillus)

The least Bell's vireo occurs in riparian areas along the lower Colorado River. Nesting habitat of the least Bell's vireo typically consists of well-developed overstories and understories, and low densities of aquatic and herbaceous cover. Least Bell's vireo occurs accidentally in the Salton Sea and New River area during migration. This low level of use is reflected by only two observations of this species at the Salton Sea NWR (CH2M HILL, 2002).

Yuma clapper rail (Rallus longirostris yumanensis)

The Yuma clapper rail is a marsh species that is known to occur in wetlands and managed duck clubs near the outlet of the New River at the Salton Sea. Dispersing clapper rails and occasional individuals have been reported in wetlands adjacent to the New River and along the Central Main canal. Rails utilize freshwater marsh habitat, such as cattail and bulrush stands with extensive shallow water. Clapper rails are strongly associated with cattail stands for nesting, and few areas of cattails exist along the agricultural drains and the New and Alamo Rivers. Areas of cattails that do exist along these waterways are small and narrow and often interspersed with vegetation, such as common reed and offer suboptimal habitat conditions (CH2M HILL, 2002).

Southwestern willow flycatcher (Empidonax traillii extimus)

Southwestern willow flycatcher occurs in riparian areas along the lower Colorado River. Southwestern willow flycatchers nest in riparian habitat characterized by a dense stand of intermediate sized shrubs or trees, such as willows (especially *Salix gooddingii*), Baccharis, or arrowweed (*Tessaria sericea*), usually with an overstory of scattered larger trees, such as cottonwoods (*Populus fremontii*). With the loss of preferred habitat throughout the Southwest, southwestern willow flycatchers have been observed utilizing salt cedar (*Tamarix* sp.) thickets for nesting (USBR, 1996). Preferred breeding habitat does not occur in the project area; therefore, it is unlikely this species would be found in the project vicinity. Salt cedars occur along the length of the New River; therefore, it is possible that this species could occasionally breed in the project vicinity; however, due to the poor quality of the riparian vegetation in the area of the project site, it is considered unlikely that this species would use the area.

Jaguar (Panthera onca)

Jaguars once ranged from southern Argentina, up along the coasts of Central America and Mexico and into the southwestern United States as far north as the Grand Canyon. In the United States, these cats were found in virtually every type of habitat, from desert grasslands to montane-conifer forests. But by the 1900s, jaguars had largely disappeared from the United States, driven south of the border by development and hunting. It is unlikely this species would be found in the project area.

Peninsular bighorn sheep (Ovis canadensis)

Peninsular bighorn sheep live on dry, rocky, low-elevation desert slopes, canyons, and washes from Palm Springs, California south into Baja California, Mexico. They eat primarily grasses, shrubs, and forbs-catclaw, encelia, sweetbush, and krameria. This species is not expected to occur within the project area.

Razorback sucker (Xyrauchen texanus), Colorado squawfish (Ptychocheilus lucius), Bonytail (Gila elegans)

Razorback sucker, Colorado squawfish, and bony tail are endangered fish species of the lower Colorado River. These fish are also known or suspected to occur in the main irrigation canals distributing water from the Colorado River, such as the All-American Canal and East Highline and Central Main canal. These species are not known or expected to be found in the New River or the Salton Sea.

Desert Pupfish (Cyprinodon macularius)

Desert Pupfish is a small freshwater fish known to occur in isolated southwestern desert drainage systems including tributaries to the Salton Sea. Desert pupfish also breed and forage in the mouths of drainage ditches entering the Salton Sea and in shallow waters behind barnacle bars that are form by wind driven waves along the Salton Sea shoreline.

Desert pupfish populations inhabit drains that discharge directly into the Salton Sea, shoreline pools of the Salton Sea , and desert washes at San Felipe Wash and Salt Creek. Pupfish movement between the Salton Sea and nearby drains has been observed (Sutton 1999). Because pupfish prefer shallow, slow-moving waters with some vegetation for feeding and spawning habitat, the shallow Salton Sea pools probably do not provide an optimal habitat (UCLA 1983). Desert pupfish are not known to occur nor are they expected to occur in the New or Alamo Rivers because of the high sediment loads, excessive velocities, and presence of predators (CH2M HILL, 2002).

Threatened Species

Bald Eagle (Haliaeetus leucocephalus)

Bald eagles visit the Salton Sea area during annual migrations to forage on fish and other food resources along the shoreline of the sea. Breeding does not occur in the Salton Sea area. Bald eagles occur around the Salton Sea and would not be expected to occur in the project area due to the lack of suitable foraging habitat.

Desert Tortoise (Gopherus agassizii) (Mojave & Sonoran populations)

Desert tortoise populations are known from many locations throughout the Mojave and Sonoran deserts of the Southwest. The desert tortoise occupies a variety of habitats throughout its range. In the Sonoran Desert of Arizona, the tortoise typically occurs in the palo verde-cacti-mixed scrub series (Barrett and Johnson 1990). Range wide, desert tortoises are typically found at elevations of 6,000 to 3,500 feet. In Arizona, they have been found as low as 500 feet (Mojave Valley, Mojave County) and as high as 5,200 feet (east slope of the Santa Catalina Mountains, Pima County). Sonoran tortoise shelter sites (dens, pallets, etc.) most often occur on rocky bajadas and slopes or in washes that dissect the desert scrub and include cavities in sides of washes, crevices beneath rocks, and depressions under shrubs. They appear to avoid the deep, fine-soiled valley situations favored by western Mojave tortoises. Nest sites are nearly always associated with soil at the mouth of shelter sites.

In Imperial County the nearest known populations to the project area at Calexico occur in the Chocolate Mountains to the east of the valley. Tortoises do not occur in the Imperial Valley. Suitable habitat for this species does not occur in the project area and the species would not be expect to be found in the vicinity of the border near Calexico or Mexicali.

Pierson's milk-vetch (Astralagus magdalenae var. peirsonii)

Pierson's milk-vetch occurs on well-developed desert dunes. In the United States, the plant is known only from the Algodones Dunes, and in nearby Mexico from a limited area of dunes within the southern Gran Desierto, in the northwestern portion of the state of Sonora. Suitable habitat for this species does not occur in the project area and the species would not be expect to be found in the vicinity of the border at Calexico.

Sensitive Species (42 species)

Most of the 42 sensitive species identified for the border area are associated with the lower Colorado River and adjacent marshes or are generally restricted to natural habitats in the Sonoran desert. The project area near Calexico is highly disturbed, fragmented and isolated from natural desert habitat. Most of the area has been converted to agriculture and intensively farmed or otherwise altered from natural conditions to construct roads and irrigation systems. It is unlikely that any of the sensitive species listed in Table 3-1 would utilize the remnant habitats occurring on the project site or in the general vicinity. Although it is possible that sensitive birds species, such as loggerhead shrike, could occasionally move through the area, the poor habitat quality would limit the presence of any of these species.

3.3 Cultural Resources

3.3.1 Affected Environment

3.3.1.1 Studies Performed and Coordination Conducted

Investigation of the affected environment included a file search at the Southeast Information Center of the State of California Historical Resources Information Center at the Imperial Valley College Desert Museum (IVCDM) in Ocotillo, California (1997 EA). Standard reference works and local historical volumes were reviewed, and several cultural resource inventories were examined, including the National Register of Historic Places, the California Register of Historical Places, and miscellaneous documents on file at the IVCDM facility. In addition, the Native American Heritage Commission in Sacramento was contacted to check for the presence/absence of Sacred Lands or other Native American traditional cultural properties that might be present in the project area.

An archaeological pedestrian surface reconnaissance survey was conducted on September 3 and 4, 1997 by a staff archaeologist. A reconnaissance survey was conducted on April 14, 2003 by Regan Giese, RPA. No evidence was found that would cause reached in 1997 to be revised, as part of the original EA. The archaeological survey was designed to identify surface cultural materials and consider the potential for significant subsurface cultural materials within the project area footprints and alignments on the U.S. side of the international border. Surface visibility in the project area ranged from poor to excellent, depending on the presence of irrigated crops, previous land alteration (grading/leveling), and the presence/absence of unregulated modern debris disposal and/or fill emplacement.

3.3.1.2 Cultural Context

A records search conducted at the IVCDM facility revealed several known archaeological and historic sites in the general project vicinity. Several archaeological sites have been previously identified along the banks of New River in the U.S.

Ethnography

The Indian groups that occupied the project area at the time of Spanish contact were the Tipai and Ipai (Kroeber 1925; Luomala 1978; Spier 1923). The Tipai and Ipai use the term Kumeyaay as a collective designation for their tribal name. Until the 1960s most ethnographers used the term Diegueno to identify these native peoples. Since the contact period, the Kumeyaay have gradually become acculturated and no longer practice many of their native traditions. Many of the bands, once autonomous tribelets, have been combined by the federal government to form a larger group and moved to reservations throughout San Diego County.

Descriptions of the Kumeyaay from the time of early European contact to the present has been preserved in the writings of explorers, soldiers, settlers, ethnographers, and Native Americans. Based on these written works of the past two centuries, a rather complete picture of protohistoric native lifeways has been recreated. Literature concerning the

Kumeyaay groups includes Barrows (1900), Gifford (1918, 1931, and 1934), Hooper (1920), Strong (1929), Heizer and Whipple (1957), Kroeber (1925), and Phillips (1975).

The Kumeyaay were seasonal hunters and gatherers (and occasional agriculturists) who used all of the major ecological zones in their area at various times of the year. They exploited the Coastal Fog Zone with its maritime resources; the Mountain Rain Zone with its oaks and piñon; and the Desert Foothill Zone with its agave and mesquite. The Salton Sea and the Laguna Salada area were oases in the desert during some portions of the year and were used for growing crops of beans, corn, and squash whenever the flood waters of the Colorado backed up into the area through various overflow channels like the New River and the Alamo River.

Most groups had their home base in the mountains which provided acorns, greens, fruits, and abundant game. Each group operated out of their central base for most of the year, using resources derived from other areas and stored nearby or along their various routes. Seasonal campsites were scattered throughout Kumeyaay territory. Their central villages were larger and permanently situated while campsites were used only as needed.

One of the major activities of the Kumeyaay was the processing (pounding, grinding and drying) of food and other materials for storage. Seeds, nuts, berries, leaves, and small animals were prepared in a similar manner. Leaching and parboiling extended the range of foods to otherwise inedible plants. The major economic activity was gathering, then hunting, with fishing being of lesser importance. Bedrock mortars, metates, and grinding slicks attest to the importance of food grinding and pounding. The Kumeyaay had a profound knowledge of their habitat and its resources and how best to exploit them.

The lands along New River belonged to individuals and/or families which had cleared and leveled them and had participated in dam and levee building, and canal maintenance. However, any Kumeyaay from any band (coastal, foothill, or mountain), could acquire land in the New River floodplain by coming and clearing additional land, participating in dam building, and extending the levee and canal system to the newly cleared land (Shipek 1982:301). The easternmost *Tipais* lived along sloughs like the New River and in the adjoining desert (Luomala 1978:593). The closest Kumeyaay tribelet to the project area was the *lya'tcarp,* whose location was illustrated by Spier (1923:Figure A) as being just northwest of the project area on the west side of the New River.

Archaeology

Kumeyaay ancestors were not the first Indians attracted to the project area. About 20,000 years ago, people lived along the coast and left flint scrapers and choppers made of pebbles. About 10,000 years later, in the cool, pluvial, terminal Pleistocene and early Holocene epochs, other relatively unspecialized bands exploited particular niches for food. While coastal shell middens attest to intensive fishing and shell fish gathering, inland campsites provide evidence for hunting big game, which was dismembered with heavy stone choppers and hides being processed with flint scrapers. Their tools appear in campsites between the coast and former lakes and marshes in the present Mojave and Colorado deserts (Luomala 1978:594).

As the glaciers retreated and the people adapted to ever drier, hotter weather, the topography itself gradually changed; from marshes and streams to deserts. Early sites of the Desert tradition, including the Kumeyaay, show by baskets and numerous metates and mullers (formerly rare or absent), people's increasing reliance upon wild plant foods, especially seeds to be parched or nuts and even bones to be ground into flour. Small, chipped stone projectile points for darts are evidence, like later arrow points, to an increasing reliance on meat mostly coming from small game (Luomala 1978:594).

By about AD 600, two great changes modified the collecting-hunting traditions; Lower Colorado River peoples (inspired probably by indirect contact with Middle American horticulture) began to plan maize, beans, and gourds in floodplains, and, later to make pottery.

Previous archaeological investigations in the immediate project vicinity have been limited. Several surveys produced negative findings (e.g., no archaeological sites were discovered) while others resulted in the discovery of artifacts (primarily broken pottery shards) along the banks overlooking the New River.

Nearby archaeological sites include CA-IMP-3149, -3150, and -3151; all being pottery scatters of varying size. The prehistoric culture sequence for the project vicinity has been presented by Gallegos (1980:29-37); it includes the Paleo-Indian / San Dieguito period (10,000-7500 BP), Desert Cultures (7000-1000 BP) including two subdivisions (Pinto / Amargosa - 6000-1500 BP and La Jolla / Pauma - 7500-1000 BP), Late Milling / Late Prehistoric (1000 BC - 1800's AD), and the Protohistoric period (ca. 1769-1848 AD).

Von Werlhof (1974; 1976a,b; 1977) has studied the archaeological potential of the immediate project vicinity. Records at the IVCDM reveal that settlers in the early 20th century had seen artifacts (portable mortars and pestles, metates and manos, projectile points, knives, scrapers, and hearthstones) at an undetermined number of temporary campsites along the old wash prior to the 1906 flood. The flood destroyed such evidence as the wash became the New River, and collectors obliterated what other evidence of Indian habitats that might have existed nearby. The lack of depth to aboriginal sites in the valley, coupled with extensive land developments in historic times, render dim the prospects of discovering archaeological sites in this large region. Nonetheless, there is always the possibility, regardless of how remote, that some sites escaped looting or destruction.

Most of the area today is under cultivation by large-scale corporate American agriculture, and is densely populated by whites and Hispanics around Brawley, El Centro, and Calexico. Spanish historic accounts relate encounters with sizable Indian populations (cf. Garces 1900). One of the largest nearby village sites is on the northeastern slope of Mt. Signal near the International Boundary and is thought to have been at the junction of several trade routes (Alvarez 1969:45). The closest major stone quarry exploited by prehistoric occupants of the project area was probably the Cerro Colorado quarry located just south of the border a few miles west of Mexicali (cf. Pigniolo 1995:Figure 1).

Local History

When settlers from the United States began to fill up the areas that the Kumeyaay used for gathering, and initiated a variety of aggressive and violent acts against them, the starving and demoralized Kumeyaay began to break up and disperse. Some moved to the Colorado River basin to live among the Quechan, while others moved into Baja California. Others remained behind and began to accommodate themselves more and more to white patterns at a very impoverished level. They often hired out as migratory workers on ranches and as domestic workers in the towns. When most the Kumeyaay were impounded on reservations in 1870, much of their culture was obliterated except in the memories of the older generation (Van Camp 1979:25). A detailed account of Kumeyaay struggles in the late 19th and early 20th centuries is presented by Luomala (1978:594-596).

The story of the conversion of the project area into a productive agricultural region is detailed in a monograph published by Frisby (1993). Spreading farms attracted the opening of service centers, some of which arose into the modern urban communities that today dot the southern half of the valley.

3.4 Land Use

3.4.1 Existing Land Uses

Mexicali is the capital of Baja California, Mexico. The Municipality of Mexicali covers an area of approximately 5,254 square miles and, according to the 2000 Census, has an approximate population of 764,000. In the vicinity of Mexicali is fertile farmland surrounded by desert. With more than 200,000 hectares under irrigation, this area produces a major portion of Mexico's staple crops, including wheat and cotton. Mexicali also has become an important exporter of asparagus, broccoli, green onions and radishes worldwide (http://www.baja-web.com/mexicali/mexicali.htm). Land use in the immediate vicinity of the proposed plant locations in Las Arenitas and Heriberto Jara, Mexico consist of Sonoran Creosote Bush Scrub interspersed with irrigated agricultural field and irrigation canals.

Imperial County is the ninth largest county in California with an area of approximately 4,597 square miles. Approximately 43 percent of the County is undeveloped, and under federal ownership and jurisdiction; one fifth of the land is irrigated for agriculture. The County contains seven incorporated cities: Calipatria, Holtville, Imperial, Brawley, El Centro, Westmoreland, and Calexico. The New River flows north from Mexico through the City of Calexico and terminates at the Salton Sea, a destination for migrating birds as well as recreationists seeking to view wildlife.

Within Imperial County, the City of Calexico is located on the north side of the international boundary with Mexico. The mix of land uses in Calexico is approximately 82 percent residential, 12 percent commercial, and 6 percent industrial. Remaining land within the city is agricultural/open space (City of Calexico Land Use Element, 1992).

3.4.2 Land Uses Plans and Policies

3.4.2.1 Plan Municipal de Desarrollo 2002-2004 XVII Ayuntamiento de Mexicali (Municipal Development Plan 2002-2004 XVII City Council of Mexicali)

A Municipal Development Plan 2002-2004 has been developed to address the concerns of the population of Mexicali and delineate the strategies and actions for the future of the city. More specifically the plan promotes the development of the valley, the port of San Felipe and the City of Mexicali. For more information, the plan can be found at the official website of the government of Mexicali at www.mexicali.gob.mx

3.4.2.2 Imperial County General Plan

The Imperial County General Plan was adopted in 1992, and re-adopted in 1996. The General Plan will be updated in the future (Richard Cabanilla, personal communication). The Land Use Element of the General Plan contains a series of goals and objectives intended to guide development programs. The County's goal for commercial agriculture includes "Preserving commercial agriculture as a prime economic force," and "discouraging the location of incompatible development adjacent to productive agricultural lands."

The Land Use Element also states that "No land shall be removed from the Agriculture category except for annexation to a city, where needed for use by a public agency, for geothermal purposes, where a mapping error may have occurred, or where a clear long-term economic benefit to the County can be demonstrated through the planning and environmental review process."

As part of the Regional Vision goals, the County seeks to "promote water recreation activities in Imperial County in suitable areas along the New, Alamo, and Colorado Rivers, and in the Salton Sea" and "identify and pursue funding sources for clean-up of the New and Alamo Rivers and the Salton Sea." Goals for Protection of Environmental Resources include "coordinating with the Republic of Mexico to clean up the polluted New River and Alamo River in order to ensure public health and safety as well as recreational resources."

As part of the goals for Public Facilities, the Land Use Element seeks to ensure that land uses adjacent to or near existing waste disposal or storage facilities are compatible with those facilities. Also, for industrial development, the county seeks to ensure that development in the areas surrounding airports is consistent with the Airport Land Use Compatibility Plan.

3.4.2.3 City of Calexico General Plan

The City of Calexico General Plan was adopted in 1992 with various plan elements revised since then. The General Plan will be revised in the near future (Ricardo Hinojosa, personal communication). The Plan recognizes the potential for the city's growth as an "economic suburb" to the City of Mexicali, and the city hopes to lure Mexicali industry or "sister"-industrial facilities to develop there. The city also hopes to attract a regional retail center to help generate needed sales tax from users on both sides of the border.

A new international Port of Entry was constructed approximately 5 miles east of the City of Calexico (Calexico East Port of Entry) to alleviate heavy traffic conditions at the existing Calexico Port of Entry at Highway 111.

In the City's General Plan a regional park is proposed along the New River on the north side of the Calexico International Airport. The planning and development of this regional park has not moved forward due to the pollution problem in the New River (Ricardo Hinojoso, personal communication 8/27/97).

The City's Land Use Element envisions the continuation of industrial land use and very low density single-family residential areas along the north runway of the Calexico International Airport, and industrial land use along the west runway.

The Safety Element of the Calexico General Plan identifies water contamination of the New River as a public health hazard and seeks to make every effort to inform and protect the public from contact and ingestion. Objectives include "Work with the State and Federal agencies to put forth a plan to treat and clean the New River in and around Calexico" and "Working with the responsible Federal agencies and cooperate with any programs that are initiated for cleaning and treatment of the New River with the governments of Baja California and Mexico."

3.4.2.4 Salton Sea Restoration Project

The Salton Sea Authority, a joint powers authority composed of the counties of Riverside and Imperial, the Imperial Irrigation District, and the Coachella Valley Water District, was established to direct and coordinate actions to improve water quality, stabilize water elevation, and enhance recreational and economic development potential of the Salton Sea and other beneficial uses.

The Salton Sea Reclamation Act of 1998 directed the Secretary of the Interior to study options for managing the salinity and elevation of the Salton Sea. This purpose for managing the salinity and elevation is to preserve fish and wildlife health and enhance opportunities for recreation use and economic development while continuing the Sea's use as a receiving body for irrigation drainage. The Act required that certain options be analyzed and required consideration of reduced inflows down to 800,000 acre-feet or less per year. Consideration of any option that included importation of water from the Colorado River was prohibited. Reporting requirements of the Act were met on January 27, 2000, when Secretary Babbit forwarded a draft EIS/EIR and several other reports to Congress. Since then, analyses have continued on options presented in those reports and on new options (U.S. Department of the Interior Bureau of Reclamation, 2003).

In January 2000, the Salton Sea Authority and the U.S. Bureau of Reclamation issued a draft environmental impact report/environmental impact statement that contained five alternatives to restore the Salton Sea. The restoration project was developed to comply with federal legislation that directs the Secretary of Interior to "conduct a research project for the development of a method to reduce and control salinity, provide endangered species habitat, enhance fisheries and protect recreation values in the area of Salton Sea." In August 2000, the Bureau of Reclamation and the Salton Sea Authority announced plans to revise and supplement the EIR/EIS based upon the public comments and the engineering evaluations. The supplemental review process is exploring additional restoration alternatives such as large-scale solar ponds.

In April 2003, the Salton Sea Authority Board of Directors endorsed moving forward with the so-called "North Lake" plan to improve the Salton Sea. The plan involves creating and managing an ocean-like lake in the North basin of the Sea by constructing a dam mid-way across the current Sea. Extensive shallow water habitat would be created using stepped ponds in the South of the Sea. The plan also includes desalinization of Imperial Valley rivers (Salton Sea Authority, 2003).

3.5 Traffic and Transportation

The information provided in the 1997 EA for the Mexicali Wastewater Collection and Treatment Project indicated that, in the United States, two major state highways provide access to and from the Calexico area across the border from Mexicali. These include:

- State Route 98 (SR 98), a two-lane, east/west highway that increases to four lanes for a 2.2-mile segment through the City of Calexico.
- State Route 111 (SR 111), a four-lane north/south highway that extends from the Mexican border north to Riverside County where it becomes a two-lane highway. SR 111 is a major thoroughfare for the City of Calexico's main business district.

South central Imperial County in the Calexico area contains two major Ports of Entry to Mexico. One is located at the southern end of SR 111 in Calexico, as stated above. The second Port of Entry was opened about 1 year ago and is located approximately 5 miles east of the City of Calexico.

The County measures traffic flow in terms of Level of Service (LOS). LOS designations range from: LOS A, indicating smooth traffic flow and virtually no congestion and delay; to LOS F, indicating long traffic delays and severe congestion. The County's Goal for an acceptable traffic service during a.m. and p.m. peak traffic periods is LOS C, for all arterial and street links, and LOS C for all intersections (Circulation and Scenic Highways Element of the Imperial County General Plan, 1992).

According to the 1997 Gateway Specific Plan Program EIR, SR 98 west of SR 111 and SR 111 south of SR 98 both have a design capacity of LOS C with 29,600 average daily trips (ADT). Currently SR 98 is experiencing traffic at LOS B (with 19,500 ADT), and SR 111 is experiencing traffic at LOS D (with 31,000 ADT). SR 111 south of SR 98 is the most highly congested highway in the area as it leads to the Port of Entry to Mexico.

3.6 SOCIOECONOMICS

3.6.1 Imperial County

Imperial County has a total population of 142,361 based on 2000 census data. Unincorporated areas contain 32,773 persons, while the seven incorporated cities (Calipatria, Holtville, Imperial, Brawley, El Centro, Westmorland, and Calexico) account for 109,588 persons. Population in the unincorporated areas tends to concentrate in agricultural areas and in recreation/retirement communities. The communities of Salton City, Salton Sea Beach, and Desert Shores are largely retirement and recreation communities, and experience a noticeable increase in population during the winter months (Imperial County General Plan, 1992). Imperial County's 2000 median household median income was $31,870

(US Census, 2000). Approximately 22.6 percent of the population in the County is living below the poverty line (US Census, 2000).

Agriculture and its related industries constitute the predominant economic base in the County. However, agriculture employment in the county is slowly decreasing (Imperial County General Plan, 1992). Other employers include the government and the retail trade industry. Generally, the county has a high unemployment rate that ranges between 30 to 40 percent annually, compared to 7 to 10 percent for the rest of California. Some of this unemployment can be attributed to the presence of seasonally unemployed agricultural workers from Mexico who are locally registered with the state (Imperial County General Plan, 1992).

3.6.2 Calexico

The City of Calexico is located on the north side of the international boundary with Mexico. Economically, Calexico functions as a suburb of the City of Mexicali, the adjacent Mexican city with a large industrial sector. Calexico's economy reflects its geographic proximity to the Mexican border and its location in an agriculturally oriented California economy. Most of the community's retail activity is oriented to the Mexicali market (Housing Element, City of Calexico, 1993). The City of Calexico's 2000 population was 27,109, which represents approximately one-fifth of the Imperial County population of 142,361 (US Census, 2000).

The 1,775-acre phased industrial and manufacturing development, the Calexico East Port of Entry, has been approved and is currently under construction (Ricardo Hinojosa, personal communication).

Ethnicity

Because of its proximity to the Mexican border, the City of Calexico has a high percentage of Spanish surnamed persons. According to the 2000 census, 95.3 percent of the population has identified itself as of Hispanic or Latino origin and 4.7 percent identified as not Hispanic or Latino origin.

Employment in Calexico is tied to retail businesses associated with consumers from Mexicali, the large Imperial County agricultural industry, and a small amount of the City's emerging industrial activity. According to the 2000 Census data, the median household income in the City of Calexico was $28,929 (US Census, 2000).

The City of Calexico Housing Element indicates a housing shortage in Calexico and projects the need for an annual average of 152 additional housing units per year for the next five years. Because of the importance of land in Calexico available for commercial and industrial uses, the city's need for increased economic opportunities and the availability of land already zoned for residential uses, no commercial or industrial land has been identified as being available for residential use (Housing Element, City of Calexico, 1993).

Currently, the southwestern and western portions of the City contain much of the city's industrial waste operations including a County landfill and the city's sewage treatment facilities, as well as the city's water supply treatment facilities, and the Calexico airport. The New River is a dominant feature throughout this area.

3.7 Public Health and Safety

The following paragraphs from the 1997 EA address the potential for human exposure to, or public safety/health risk associated with: (1) hazardous materials both from the existing environment and from the proposed construction and operation of additional wastewater treatment facilities, both in the United States and in the City of Mexicali; (2) seismic hazards; (3) degraded water quality; (4) odors and vectors; and (5) irrigation canals.

The New River is considered to be heavily polluted with domestic, industrial, and agricultural wastes from Mexico. In addition, agricultural nutrients, pesticides, selenium, and salt inputs are discharged into the river from irrigation drains of the Imperial Valley.

The Mexicali metropolitan area contributes raw and partially treated sewage to the New River. Expanding industrial growth has resulted in additional wastewater loads from domestic industry, pesticide preparation, slaughter houses, food processing, and other waste generators entering the New River in Mexico.

Discharge of untreated or treated sewage in surface water systems may cause a variety of public health risks including: exposure to bacteria, viruses, and toxic or carcinogenic constituents.

Health hazards associated with the New River have been investigated by the Imperial County Health Department and the Agency for Toxic Substances and Disease Registry *(ATSDR, 1996).* Health hazards associated with the river and aquatic resources are derived from pathogens, toxic organics, pesticide residues, and foam containing pathogens from Mexicali sewage. Fecal coliform and fecal streptococci bacteria are commonly detected in water quality sampling conducted at the international boundary. Fish and wildlife resources using the river are exposed to pathogens and toxics through the water column, sediments, and the food chain.

3.8 Scenic, Visual, and Recreation

3.8.1 Existing Visual Characteristic

Imperial Valley is part of the arid Colorado Desert and within the Salton Trough, an area of very flat terrain. The 35-mile-long Salton Sea, the state's largest lake, is located in the lower Coachella-upper Imperial Valleys within both Imperial and Riverside Counties, and serves as a drainage repository for agriculture. Elevations of the valley range from sea level at the Mexican border, to 278 feet below sea level at the bottom of the Salton Sea (http://www.iid.com/aboutiid/env-salton.html). Approximately 43 percent of Imperial County is undeveloped, and under federal ownership and jurisdiction; one fifth of the land is irrigated for agriculture.

The Salton Sea is a destination for migrating birds as well as recreationists seeking to view wildlife. Several national wildlife refuge areas are situated along the Sea. The communities of Salton City, Salton Sea Beach, and Desert Shores are largely retirement and recreation communities near the Salton Sea that experience a noticeable increase in population during the winter months (Imperial County General Plan, 1992). The southern shore of the Salton Sea is located approximately 35 miles from the international boundary at Calexico.

SR 111 follows the northeast shore of the Salton Sea and is proposed as a scenic highway from Bombay Beach to the County line. The Circulation and Scenic Highways Element of the Imperial County General Plan states:

> *"The drive along this body of water [Salton Sea] is a study in primitive beauty and an interesting and startling anomaly. The contrast between the flat, wide Salton Sea and its sandy beach, and the rugged rise of the Chocolate Mountains has many variations. The Panoramic view of the southwest shore and its backdrop of mountains is also a sight of prehistoric beauty."*

The New River is an incised channel that extends north from Mexico through the City of Calexico, and northward where it discharges to the Salton Sea. The Alamo River is a similar north-draining river that also extends from Mexico and outlets at the Salton Sea. The Alamo River would cross the International Boundary approximately 6 miles east of the City of Calexico but is effectively cut off by a weir, diverting flow back into Mexico. The Alamo River in the U.S. receives Imperial Valley agricultural drainage.

The City of Calexico is visually characterized as urbanized landscape bounded by open areas of agricultural fields that are traversed by irrigation canals. Views of arid mountains are seen in the background. No significant visual features exist in the Calexico area with the exception of the New River, which contains areas of riparian vegetation in its wide drainage. However, the current level of pollution in the New River, which includes trash, odors, and high levels of coliform and total dissolved solids (TDS), has prevented the river from being considered a significant scenic or recreational feature for the city.

Recreational resources in south central Imperial Valley include birdwatching and some fishing at the Salton Sea, off-road vehicle use, and some camping and hiking in the mountain areas. The Imperial Sand Dunes, sometimes called the Algodones Dunes, are located at the eastern edge of the Imperial Valley agricultural region in a band averaging five miles in width. The dunes attracts tens of thousands of off highway vehicle (OHV) enthusiasts to the area.

The City of Calexico contains several small public parks, none of which are situated west of the All American Canal and south of the New River, nor near the New River crossing of the international border. Also, bike lanes or trails do not exist in either of these areas.

3.9 Air Quality

3.9.1 Climate

The climate of the Imperial Valley is generally typical of Sonoran desert regions of the Southwest. The annual average temperature is 71°F. The highest maximum daily temperature of record is 119°F (CH2M HILL, 1994). Typically, temperatures in excess of 100°F occur on more than 100 days per year, usually during the summer months of June through September. The lowest minimum temperature of record is 16°F (CH2M HILL, 1994).

Agricultural development in the Imperial Valley has altered the natural desert environment through intensive irrigation practices, raising the relative humidity over that observed in the surrounding desert region. Average daily relative humidity in the valley is low, ranging from 28 percent in spring to 52 percent in winter. Most of the valley receives less than 3 inches of rain per year. The average annual rainfall, as measured by the Imperial Irrigation District (IID) is about 2.9 inches (CH2M HILL, 1994). The maximum daily rainfall is 4.08 inches, while the extremes of record in one year are a maximum of 8.52 inches and minimum of 0.16 inch.

Prevailing winds are generally from the northwest to the southeast. Strong temperature differentials are created by intense solar heating, producing moderate winds and deep thermal convection. Winds average 8 to 12 mph from the west during the daytime, dropping to an average of 3.4 mph at night.

3.9.2 Air Quality

Regulatory Framework

Air quality impacts are assessed by comparing impacts to baseline air quality levels and applicable ambient air quality standards. Federal and State air quality standards have been established for various pollutants (Table 3-2). Standards are levels of air quality considered safe from a regulatory perspective, including an adequate margin of safety, to protect public health and welfare.

Table 3-2

National and California Ambient Air Quality Standards

Mexicali II EA

Pollutant	**Averaging Time**	**CAAQS**[1]	**NAAQS**[2]	
			Primary[3]	**Secondary**[3]
Ozone (O_3)	1-hour	0.09 ppm (180 µg/m^3)	0.12 ppm (235 µg/m^3)	0.12 ppm (235 µg/m^3)
	8-hour (new)	-	0.08 ppm (157 µg/m^3)	0.08 ppm (157 µg/m^3)
Coarse	24-hour	50 µg/m^3	150 µg/m^3	150 µg/m^3
particulate matter	Annual AM	-	50 µg/m^3	50 µg/m^3

(PM_{10})	Annual GM	30 µg/m³	-	-
Fine particulate Matter ($PM_{2.5}$)[4]	24-hour (new) Annual AM (new)	- -	65 µg/m³ 15 µg/m³	65 µg/m³ 15 µg/m³
Carbon monoxide (CO)	1-hour 8-hour	20 ppm (23 mg/m³) 9 ppm (10 mg/m³)	(10 mg/m³) (40 mg/m³) 9 ppm (10 mg/m³)	- -
Nitrogen dioxide (NO_2)	1-hour Annual AM	0.25 ppm (470 µg/m³) -	- 0.053 ppm (100 mg/m³)	- 0.053 ppm (100 mg/m³)
Lead (Pb)	30-day Calendar Quarter	1.5 µg/m³ -	- 1.5 µg/m³	 1.5 µg/m³
Sulfur dioxide (SO_2) Visibility Reducing Particles	1-hour 3-hour 24-hour Annual AM 8-hour (10 am to 6 pm)	0.25 ppm (655 µg/m³) - 0.04 ppm (105 µg/m³) - Extinction Coeff. = 0.23/km @ < 70% RH	- - 0.14 ppm (365 µg/m³) 0.03 ppm (80 µg/m³) -	- 0.5 ppm (1,300 µg/m³) - - -
Sulfates	24-hour	25 µg/m³	-	-
Hydrogen Sulfide (H_2S)	1-hour	0.03 ppm (42 µg/m³)	-	-

Source: ARB Fact Sheet 39 (11/91), SCAQMD Bulletin (8/97), www.arb.ca.gov, and CH2M HILL, 2002.

Notes:

[1] California standards for O_3, CO, SO_2 (1-hour and 24-hour), NO_2, PM_{10}, and visibility reducing particles are values not to be exceeded.

[2] National standards (other than O_3, PM_{10}, and those based on annual periods) are not to be exceeded more than once per year. The new ozone standard is based on a 3-year average of the fourth highest 8-hour concentrations in each year. For PM, the 24-hour standard is based on 99 percent (PM_{10}) or 98 percent ($PM_{2.5}$) of the daily concentrations, averaged over 3 years.

[3] Equivalent units given in parenthesis are based upon reference conditions of 25_C and 760 mm mercury.

[4] USEPA promulgated new federal 8-hour O_3 and $PM_{2.5}$ standards on July 18, 1997. The federal 1-hour O_3 standard continues to apply in areas that remain in violation of that standard.

The Federal Clean Air Act was enacted in 1970 and amended in 1977 and 1990 (42 U.S.C. 7506 (c). In 1971, National Ambient Air Quality Standards (NAAQS) were established for the following six primary pollutants of concern: ozone (O_3), carbon monoxide (CO), nitrogen oxides (NOx), sulfur dioxide (SO_2), total suspended particulates (TSP), and lead. The TSP standard was later changed to respirable (10 microns in diameter or less) particulates. Given the option of establishing more stringent standards, California has used different exposure periods, and adopted additional standards (sulfate and visibility-reducing particulates) to address the unique meteorological conditions of the state. In most instances, the state standards are more stringent than the federal standards.

State authority for air quality control is regulated under by the California Clean Air Act (CCAA) of 1988 and other implementing legislation. The CCAA requires all areas of the state to achieve and maintain California Ambient Air Quality Standards (CAAQS) by the earliest date practical. The California Air Resources Board (CARB) administers the CCAA and establishes and directs local air pollution control districts (APCDs) to implement the CAAQS).

Imperial County lies within the Salton Sea Air Basin (California State and Local Air Monitoring Network Plan, 2002). Industrial and mobile sources of emissions in Imperial Valley are generally few, thus limiting the exceedances of Federal and California State Air Quality Standards. Particulate emissions are largely due to meteorological conditions, minimal rainfall, and dry soils. The Imperial County Air Pollution Control District (ICAPCD) has adopted rules specifying pollutant emission levels and ambient air quality standards. Imperial County operates and maintains air quality monitoring stations in Brawley, Calexico (3), El Centro, Niland, Westmorland, and Winterhaven.

Control measures for PM_{10} emissions are derived from federal mandated revision to the State Implementation Plan (SIP) where it specifies reasonably available control measures (RACMs) for control of fugitive dust. The ICAPCD also adopted the Air Quality Attainment Plan (AQAP) in 1992 to reduce ozone-forming emissions and attain state ozone standards.

Imperial County is designated as federal transition nonattainment area for ozone and all areas of the county are designated as attainment for NAAQS for CO, NO_2 and SO_2 (CH2M HILL, 2002). Imperial County is designated as a state nonattainment area for O_3 and PM_{10}. The City of Calexico is designated as state nonattainment for CO. The remainder of the County is designated as unclassified for the state CO standard and the entire county is designated as attainment for the remaining CAAQS (CH2M HILL, 2002).

The most prevalent airborne pollutant in the SSAB is in the form of fugitive dust. In the SSAB, windblown fugitive dust, wind erosion of exposed soils, and vehicle travel over unpaved roads are the major sources of PM_{10}.

The closest APCD air quality monitoring station to the proposed wastewater treatment site in Mexicali is in the City of Calexico, where periodic measurements have been recorded in the past 10 years for ozone and PM_{10} levels. The number of violations of the state and federal ozone standards has decreased since 1994. The increased stringency of the new 8-

hour federal ozone standard is shown by the increased number of days during which this standard would have been exceeded relative to the 1-hour ozone standard. The state ozone standard, which is more stringent, was exceeded more frequently than the federal 8-hour standard. The fourth highest ozone concentration during the 3-year period from 1996 and 1998 is listed as 0.14 ppm, which is slightly above the federal 1-hour ozone standard of 0.12 ppm.

Violations of the state 24-hour PM_{10} standard occurred between 1994 and 1999 in Imperial County. Imperial County also was in violation of the federal 24-hour PM_{10} standard, and the number of violations appears to be increasing. The number of violations of the state and federal 24-hour PM_{10} standards in San Diego County has remained relatively constant during the same time period. All of the highest PM_{10} concentrations in Imperial County were measured at the three monitoring stations in the City of Calexico.

Between 1994 and 1999, concentrations of CO have exceeded the state 1-hour standard and both the state and federal 8-hour standards in Imperial County. In addition, concentrations of NO_2 appear to be increasing and exceeded the state 1-hour standard in 1998 and 1999. Annual NO_2 and all SO_2 concentrations remain below state and federal standards (CH2M HILL, 2002).

3.9.3 Odors

The New River has been identified as the source of odors in complaints filed with the RWQCB. Odors may be caused by anaerobic conditions in water and river sediments created by oxygen-demanding material in the New River. Additionally, foaming agents periodically cause substantial formation of foam layers on the river that have a localized odor component. Agriculture operations in the Imperial Valley also contribute unpleasant odors (e.g. composting ammonia fumes, alfalfa drying, and smoke during stubble removal).

3.10 Geology, Seismicity, and Soils

The project area is located at the southern limit of the Imperial Valley, which lies within the Salton Trough, a major structural trough bounded by the Chocolate Mountains to the northeast and the Peninsular Ranges of southern and Baja California on the west. The Salton Sea is the lowest area of the depression and serves as an undrained sink collecting surface water flows, including the terminus of the New River. The Salton Sea separates the Imperial Valley from the Coachella Valley to the north. The Trough is a structural extension of the Gulf of California. Deposits marking the shoreline of Lake Cahuilla, which formed in prehistoric times are evident around the Imperial Valley area. The Salton Trough is a rift zone of high seismic activity and rapid sedimentation. The project area is underlain by alluvium, sand dune, and lacustrine (lake bed) deposits. Marine and non-marine sedimentary rocks occur beneath the recent deposits.

3.10.1Alluvium, Sand Dune, and Lacustrine Soils

The project area north of the international boundary is characterized by Quaternary-age alluvium, sand dune, and lacustrine deposits. Alluvial material is derived from the erosion of mountainous ranges forming the trough. Sediments are transported and deposited by drainages and washes. The Pinto Wash is the principal watercourse entering the general project vicinity. Sand dune deposits are derived from erosion and deposition of surficial soils during high winds.

Lacustrine deposits are derived from historic Lake Cahuilla, which was formed by the diversion of Colorado River water into the Salton Trough. Lacustrine materials are likely to consist of sandy silt, silty sand, and clayey sand with intervals of clay.

3.10.1.1 Agricultural Soils

Surface soils in the project vicinity are generally under intensive agricultural practices, with the exception of the riparian corridor of the New River and adjacent flood channel area. Soils are generally classified as marginal to excellent and suited for agricultural use, particularly if properly irrigated.

3.10.1.2 Seismicity

The City of Calexico lies approximately 8 to 12 miles west of the San Andreas Fault (City of Calexico, 1992). The San Andreas Fault is one of the most active faults in recorded earthquake history. The Imperial Fault is the nearest major fault in the project area. The active Imperial Fault diagonally traverses the Imperial Valley from southeast to the northwest and is located approximately 5 to 7 miles to the northwest of the New River and the project area. The project area in the United States is located outside of the State of California Special Studies Zone for Earthquake Faults (Alquist-Priolo Zone) that generally consists of a 1,000 foot-wide corridor on either side of the Imperial Fault. An unnamed splinter fault trace also occurs within 5 miles of the project area, that may be an offshoot of the Imperial Fault. Information regarding the activity status of this fault is not available.

Recent earthquakes on the Imperial Fault include the 1979 earthquake of magnitude 6.5, that resulted in ground surface rupture. In 1940, an earthquake of estimated 6.9 to 7.1 magnitude resulted in similar ground rupture. The maximum horizontal displacement in the 1940 earthquake was approximately 19 feet, measured near the International Border (City of Calexico, 1992).

Other major Southern California region earthquake faults could generate significant ground accelerations and ground shaking in the area. The seismic characteristics for the region's major faults and the distance of these faults from the project area are presented in Table 3-3.

Table 3-3

Seismic Parameters for Selected Faults

Mexicali II

Fault	Approximate Distance from Fault to Project Area	Maximum Credible Earthquake Magnitude[1]	Estimated Acceleration (g)	
			Peak Horizontal Bedrock[2]	Repeatable High Ground[3]
Imperial	Within 5	7.0	0.63	0.41

Laguna Salada	18	7.3	0.20	0.13
Cerro Prieto	12	7.3	0.26	0.17
San Andreas (Southern Section)	50	7.5	0.08	0.08
San Jacinto	23	7.5	0.18	0.18
Superstition Hills	15	7.0	0.20	0.13
Whittier-Elsinore	39	7.5	0.10	0.10
1. Mualchin and Jones (1992) and USGS (1990) 2. Mualchin and Jones (1990) 3. Ploessel and Slosson (1974)				

3.11 Noise

The regulatory standards and existing noise environment described in the 1997 EA are still valid for this analysis and they are as follows:

3.11.1 Regulatory Standards

There are several ways to measure noise depending on the source of the noise, the receiver, and the reason for the noise measurement. The standard unit of noise measurement is the decibel (dB). Everyday sounds normally range from 100 dB (very loud) to 30 dB (very quiet). Noise levels can also be stated as hourly equivalent sound pressure (L_{eq}) in terms of decibels on the A-weighted scale (dB). Noise levels stated in terms of dBA approximate the response of the human ear by filtering out some of the noise in the low and high frequency ranges that the human ear does not detect well.

Another measure, often used in local noise ordinances, is the Community Noise Equivalent Level (CNEL). The CNEL values are time-weighted, 24-hour, average noise levels (L_{eq}) values) based on the A-weighted decibel. The weighting factor reflects the increased sensitivity to noise during the evening and nighttime hours.

Neither Imperial County nor the City of Calexico have yet adopted a Noise Ordinance, but each jurisdiction has an adopted Noise Element to their respective General Plans. Noise measurement in County's and City's Noise Element is provided in CNEL. The county and City Noise/Land Use Compatibility Guidelines specify the following exposures to be the maximum normally acceptable noise levels:

Residential:	60 CNEL, dB
Hotels/Motels:	60 CNEL, dB
Schools, Libraries, Churches, Hospitals, Nursing Homes:	60 CNEL, dB

Playgrounds, Neighborhood Parks:	70 CNEL, dB
Golf Courses, Riding Stables, Water Recreation, Cemeteries:	70CNEL, dB
Office Buildings, Business Commercial and Professional:	65 CNEL, dB
Industrial, Manufacturing, Utilities, Agriculture:	70 CNEL, dB

In accordance with Title 24 of the California Code of Regulations, Imperial County has adopted and interior noise standard of 50 dB averaged over a one-hour period for offices, schools, libraries, and other noise sensitive areas and 45 dB for detached single family dwellings. Since the average attenuation factor for structures with closable windows is 20 dB, a 65-dB CNEL exterior noise exposure is typically considered to be a desirable maximum exterior noise level (1997 Gateway Specific Plan Program EIR).

For exterior noise standards, the County Noise Element and the City of Calexico's Noise Element provides the following Property Line noise Limits:

Land Use Zone	**One-Hour Average Limit**
Residential Zones:	50 dB (7 a.m. to 10 p.m.) 45 dB (10 p.m. to 7 a.m.)
Multi-residential Zones:	55 dB (7 a.m. to 10 p.m.) 45 dB (10 p.m. to 7 a.m.)
Land Use Zone	**One-Hour Average Limit**
Commercial Zones:	60 dB (7 a.m. to 10 p.m.) 55 dB (10 p.m. to 7 a.m.)
Light Industrial/Industrial Park Zones:	70 dB any time
General Industrial Zones:	75 dB any time

These property Line Noise Limits do not apply to construction. For construction, the Noise Element specifies that noise from a single piece of equipment or combination of equipment shall not exceed 75 db L_{eq}. Hours of construction must be limited to 7 a.m. to 7 p.m. Monday through Friday and 9 a.m. to 5 p.m. on Saturday.

3.11.2 Existing Noise Environment

The Noise Element identifies the Calexico International Airport, along with seven other Imperial County airports, as a source of noise that may affect sensitive land use. The Element contains a CNEL contour map for the Calexico International Airport that projects a future 65 CNEL contour extending to All American Canal on the west, and a 55 CNEL contour extending 0.8 mile beyond the All American Canal on the west. Also, other aircraft noises in the area occur as part of agricultural operations, where aircraft are used for crop spraying.

Noise sources west of all American Canal south of the New River would also include traffic noise for automobiles and trucks traveling along Anza Road. At the New River crossing of the international border, the dominant noise source is traffic generated by the commercial truck port of entry and local traffic on Second Street.

3.12 Energy

The IID supplies electricity to most of Imperial County serving over 90,000 residents in Imperial and parts of Riverside Counties. The only exception is the Palo Verde area, where power is supplied by Southern California Edison. IID operates nine hydroelectric generation plants, a 180-megawatt steam plant, and eight gas turbines.

Natural gas is provided by the Southern California Gas Company. There are no known fossil fuel reserves in Imperial County. Fossil fuel is delivered to the County via pipeline from sources outside the County.

Imperial County is a leader in the development of geothermal resources and has one of the largest geothermal resources in the world. Most of the geothermal power generated in Imperial County is exported out of the County.

Section 4
Environmental Consequences

4.1 Water Resources and Quality

4.1.1 Impacts of the Preferred Alternative

Impacts on Water Flows

Impacts from changes in New River flows resulting from the proposed project are evaluated. While changes in water quality are fairly simple to evaluate, changes in flows of the New River and, in turn, to the Salton Sea are difficult to gauge. Because the New River, both in the U.S. and in Mexico, is made up primarily of agricultural return drainage, historic New River flows fluctuate considerably, depending on land use. Consequently, a consistent quantity of flow from Mexico cannot be anticipated from one year to the next. As noted in Figure 4-1, flow in the New River at the International Boundary decreased by more than 125,000 acre-feet/year (AF/y) between the years of 1985 to 1990. It should also be noted that Mexico has the right to re-use or redirect all water enters the New River south of the International Boundary. Recently, two power plants have been constructed in Mexicali, which, because they use Mexicali wastewater as cooling water, have the potential of reducing water flows to the New River by 625 liters per second (lps) (15,971 AF/y). If the proposed Mexicali II wastewater project (Alternative 1 or 2 of this EA) does not materialize, the local utility in Mexico may opt to divert more wastewater for power plant use in order to increase treatment capacity at the existing wastewater lagoons. Mexico might also decide to move forward with the Las Arenitas treatment plant, but without funding from the United States.

However, in an effort to gauge potential impacts from water reductions to the New River and the Salton Sea, this EA will assume, for purposes of determining the "baseline" (i.e., the "No Action Alternative" conditions) that the flows at the International Boundary would remain at the average 1991-2001 level less the amount which would be consumed by the new power plants operating near full capacity. This amount is 123,388 AF/y (Figure 4-1). Flows into the Salton Sea would be expected to remain at the 1991-2001 average less the flows to the power plants. This amount is 1.31 million AF/y, which is higher than the average inflows to the Salton Sea from 1982 to 1992. (Coincidentally, the New River flows at the International Boundary were at historic high from 1983-1988.) It should also be noted that the "Imperial Irrigation District Water Conservation and Transfer Document Final Environmental Impact Statement" (IID EIS) argued that a "baseline" of 1.23 million AF/y is more appropriate for measuring project impacts, because even if the 200,000 AF/y water transfer project does not materialize, flows to the Salton Sea can be expected to drop by nearly 100,000 AF/y.

For determining flow reductions resulting from this proposed project, the EA considered two possible scenarios: the 600 lps (13.7 mgd or 15,342 AF/y) expected now, and 880 lps (20.1 mgd or 22,501 AF/y), the maximum capacity of the force main, which is the level expected to be generated in the Mexicai II service area by the year 2014. These are both conservative estimates for measuring impacts to the Salton Sea, because they assume no evaporative losses would occur to these flows by the time they travel 65 river miles to the Salton Sea. These scenarios also make the conservative assumption that wastewater generated in the Mexicali I service area will not increase. Finally, for purposes of measuring the increased shoreline exposure of the Salton Sea, only the current flows were used, as any addition in flows in the New River would simply increase the baseline conditions against which the impact is measured.

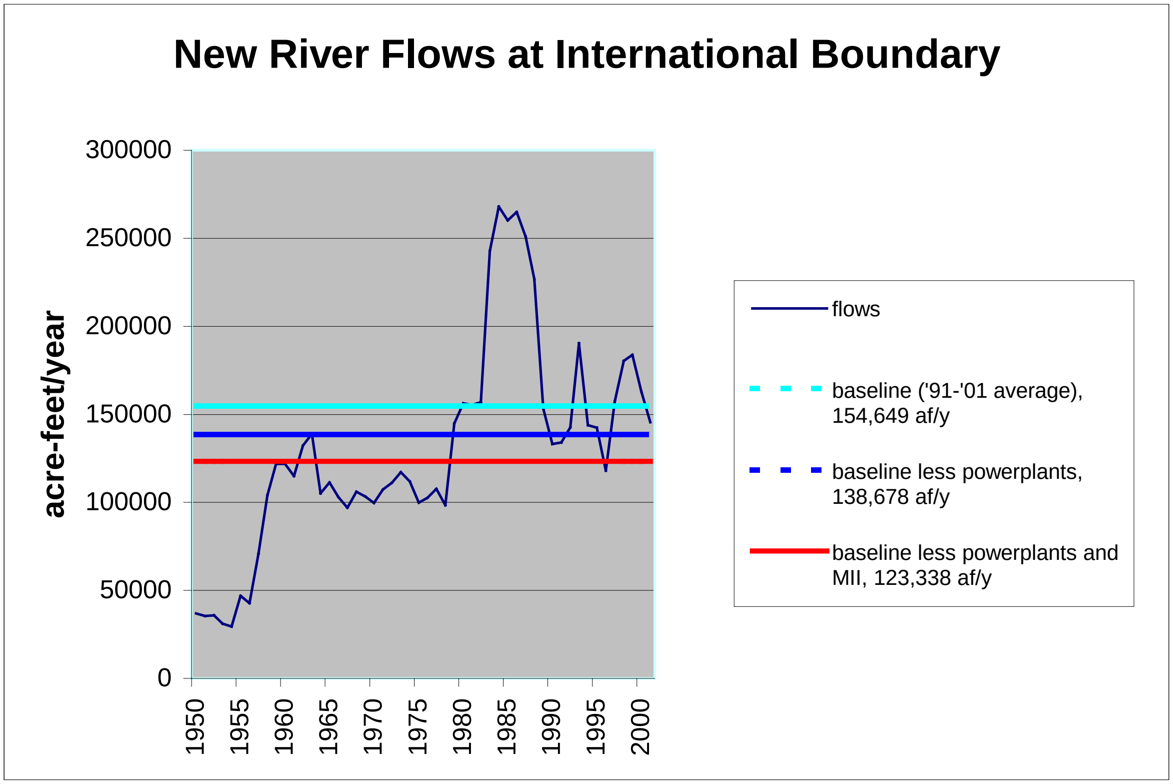


Figure 4-1, New River Flows at International Boundary

There are no "significance" criteria that stipulate a specific federal or state standard for the elevation area, or quantity of water in the Salton Sea. Impacts would be considered significant if they substantially altered river flows resulting in either increased flooding of areas adjacent to the river or extreme low flows, and thus altering beneficial uses of the Salton Sea Basin.

Total inflows to the Salton Sea are presented in the following table:

Table 4-1. Salton Sea Water Flows.

Source	Acre-Feet/Year
Alamo River	623,678
New River	426,135
Other	278,242
Total	**1,328,055**

The amount of water flowing into the New River will be altered as a result of the preferred alternative, which requires the diversion of approximately 600 lps (15,342 AF/y) to 880 lps (22,501 AF/y) of sewage from Mexicali II discharge to the proposed water treatment plant in Las Arenitas.

The New River makes up approximately 32% of the influent water sources to the Salton Sea (Table 4-1). According to the Salton Sea Authority, the total water inflow from all sources to the Salton Sea is estimated to be 1.3 million AF/y. The diversion of 600 lps will reduce the total inflow to the Salton Sea by 1.17% (Table 4-2). Therefore, the New River flow would potentially change from 32% of the total to 30.83% of the total inflow to the Salton Sea. The 600 lps represent a 3.74% reduction of flow within the New River at the Salton Sea and an approximate flow reduction of 11%[1] at the border. The diversion of 880 lps will reduce the total inflow to the Salton Sea by 1.71% (Table 4-2). Therefore, the New River flow would potentially change from 32% of the total to 30.29% of the total inflow to the Salton Sea. The 880 lps represents a 5.49% reduction in flow within the New River at the Salton Sea and an approximate flow reduction of 16% at the border. The difference in flow at the border versus at the Salton Sea is due to the fact that approximately 70% of flow into the New River occurs in the United States.

Table 4-2. Impact on Water Flow to the Salton Sea and New River.

BASED ON 600 LPS OF FLOW REDUCTION

Reduction of water flow from the New River to the Salton Sea:

$$\frac{\text{Wastewater Diverted from the New River}}{\text{Total Water Flowing into the Salton Sea}} = \frac{\text{600 lps (15,342 AF/y)}}{\text{51,320 lps*(1,311,914 AF/y)}} \times 100 = 1.17\%$$

Reduction of water flow in the New River:

$$\frac{\text{Wastewater Diverted from the New River}}{\text{Total Water Flowing in the New River}} = \frac{\text{600 lps}}{\text{16,041 lps*(410,166 AF/y)}} \times 100 = 3.74\%$$

Flow of the New River at the Salton Sea = 16,041 lps*

BASED ON 880 LPS OF FLOW REDUCTION

Reduction of water flow from the New River to the Salton Sea:

$$\frac{\text{Wastewater Diverted from the New River}}{\text{Total Water Flowing into the Salton Sea}} = \frac{\text{880 lps (22,501 AF/y)}}{\text{51,320 lps*(1,311,914 AF/y)}} \times 100 = 1.71\ \%$$

Reduction of water flow in the New River:

$$\frac{\text{Wastewater Diverted from the New River}}{\text{Total Water Flowing in the New River}} = \frac{\text{880 lps}}{\text{16,041 lps*(410,166 AF/y)}} \times 100 = 5.49\ \%$$

Flow of the New River at the Salton Sea = 16,041 lps*

*This number includes a 625 lps reduction due a potential power plant water diversion in Mexicali.

The following graph demonstrates that the 880 lps (22,501 AF/y) are within the seasonal variations of water inflow in the Salton Sea Basin. In other words, there is a 95% probability that the 880 lps will fall within the annual variations of the inflows to the Salton Sea Basin.

[1] Based on an average historic flow of 214 cfs (6060 lps) measured near the International Boundary at Calexico (see section 3.1.1), minus 22 cfs (625 lps) to account for power plant diversions

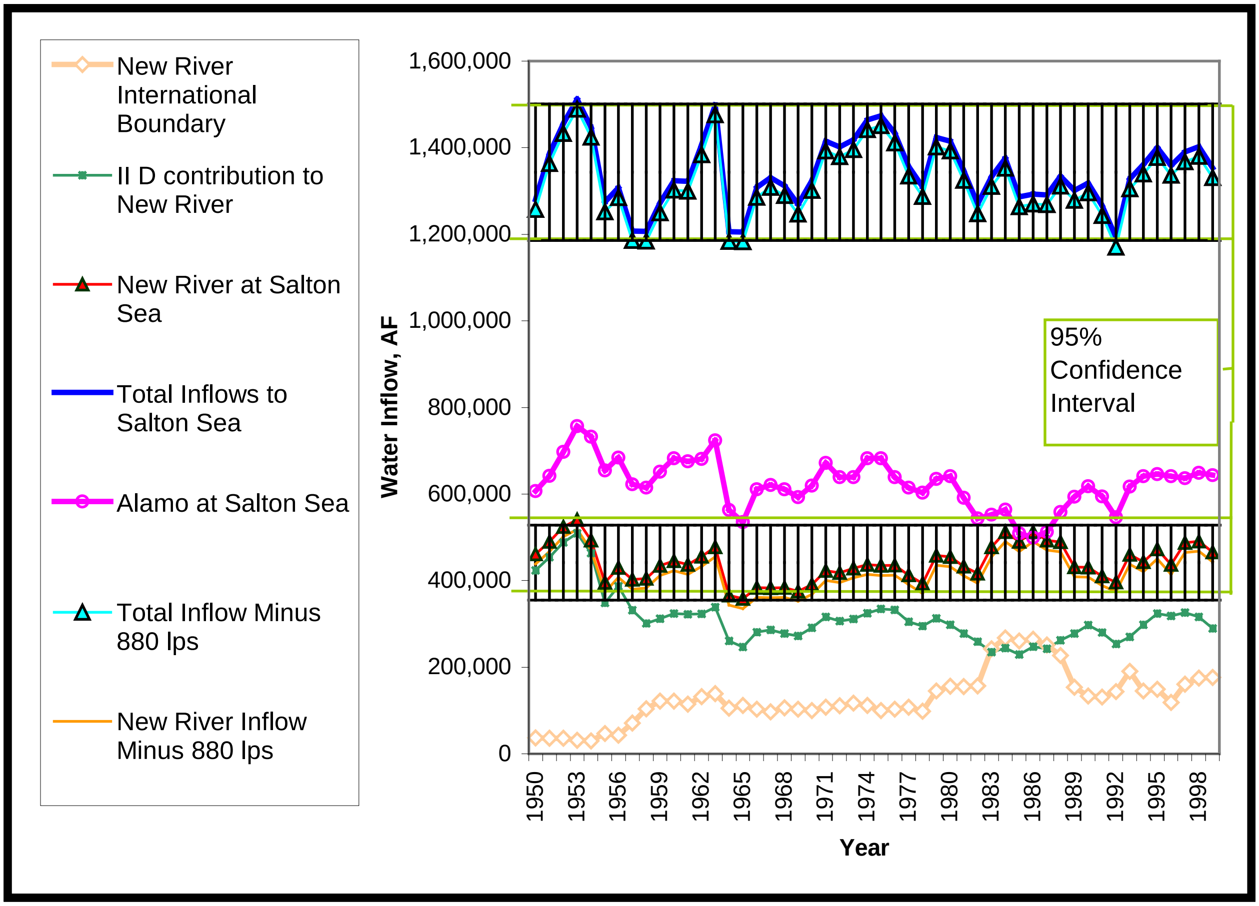


Figure 4-2. Annual Variations of Water Inflow to The Salton Sea Basin.

Table 4-3 provides the historic total inflow to the Salton Sea from all sources, as well as specifically from the New River and from the contribution of Mexico to the New River. The data is from the year 1950 to 1999. The flow data for each category were averaged and the standard deviations for the data were calculated. The standard deviations are:

- 60,313 AF for the New River Inflow from Mexico.
- 43,350 AF for the total New River Inflow to the Salton Sea.
- 78,752 AF for the total Inflow to the Salton Sea from all sources.

These deviations demonstrate that there are significant variations in the Salton Sea inflows. The 880 lps (22,501 AF/y) are within the historical fluctuations in flow as shown in Figure 4-2 and Table 4-3.

Table 4-3. Historic Inflow Data.

Year	Historic New River Inflow from Mexico	Historic New River Inflow	Total Historic Inflow To Salton Sea
	Data in Acre Feet		
1950	36992	460665	1280106
1951	35508	489668	1386117
1952	35917	524461	1455620
1953	31116	540547	1511825
1954	29505	492737	1447077
1955	46985	395860	1274492
1956	42713	429655	1307212
1957	70845	402516	1207959
1958	103983	405194	1207020
1959	121824	434219	1272456
1960	121312	445059	1324204
1961	115031	436967	1322110
1962	132179	455330	1406182
1963	138936	477479	1498686
1964	105087	365857	1205713
1965	111339	357747	1205459
1966	102958	383469	1307879
1967	96899	383211	1330853
1968	106019	384078	1312274
1969	103312	375449	1268848
1970	99671	390487	1323862
1971	107281	422995	1415142
1972	111165	418063	1402050
1973	117160	428639	1417927
1974	111839	436575	1464508
1975	99791	434507	1473758
1976	102588	435111	1434038
1977	107713	412978	1356900
1978	98408	393045	1309603
1979	144905	457720	1423970
1980	156320	454544	1415027
1981	155443	433241	1347232
1982	157009	416302	1269771
1983	242606	477433	1332892
1984	267904	512260	1375207
1985	260238	489532	1286184
1986	264837	512348	1292889
1987	250862	493152	1290803
1988	226802	488940	1333871
1989	153439	431428	1300989
1990	133088	430510	1318003
1991	130775	410629	1265777
1992	143178	396595	1192844
1993	190457	460296	1327984
1994	145260	443064	1361668
1995	148762	472686	1400300
1996	118678	436589	1358658
1997	160762	487223	1390104
1998	174870	490930	1402272
1999	176447	465779	1353419
Average	128934	441475	1343395
Maximum	267904	540547	1511825
Minimum	29505	357747	1192844
Std Deviation	**60313**	**43350**	**78752**

Source: IID Water Conservation And Transfer Project EIR/EIS/Appendix F. October 2002.

The surface area loss to the sea can be estimated through a simple water balance. Assuming evaporation losses to the sea to be 5.78 feet[2], approximately 2,654 acres of surface area of the Sea would have to be lost before these evaporative losses equal the reduction from the diversion of 600 lps (15,342 AF/yr) of wastewater out of the New River. The University of Redlands modeled this reduction (see Figure 4-3). The red areas represent expected shoreline exposure from this project. The areas in pink represent expected shoreline exposure resulting from the power plants' use of Mexicali wastewater. Modeling these losses also indicate that the Salton Sea would drop by approximately 0.5 feet below current levels. It is estimated that within 2 to 3 years the reduction in inflows will equal the reduction in evaporative losses, at which point the Sea will regain equilibrium, provided there are no other flow reductions[3]. The surface level of the Sea after this reduction would still be at a higher elevation than where it was between 1982 to 1992. It should also be noted that the IID EIS estimates that the average inflow to the Sea will decrease by 100,000 AF/y to 1.23 million AF/y under "baseline" conditions. Assuming that the evaporation rate remains constant during this time, the Sea would be expected to decrease by 17,000 acres.

Figure 4-3, Mexicali Wastewater Inflow Reductions

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2 Evaporation rate of the Salton Sea used by the Redlands Institute.

3 Personal communication between Doug Liden, EPA, and Ken Althiser, Redlands Institute, July 30, 2003.

Impacts on Water Quality

As discussed in the IID EIS (CH2M HILL, 2002), there are no "significance" criteria that stipulate a specific federal or state water quality standard for salinity concentrations in the Salton Sea. Therefore, a finding of significant impact to the Sea, based on a regulatory standard for salinity, cannot be made at this time. However, it is understood that elevated salinity concentrations can substantially degrade the water quality of the Sea. Further analysis of the impacts that increased salinity levels could have on the biological resources of the Sea is included in Section 4.2.

Using the projected flow reduction, the 600 lps reduction of flow will reduce the salt loading that is flowing into the New River and on into the Salton Sea by 18,287,726 Kg/Yr.

$$\frac{600\ \text{L}}{\text{Sec}} \times \frac{60\ \text{Sec} \times 60\ \text{Min} \times 24\ \text{Hrs} \times 365\ \text{Days}}{1\ \text{Year}} \times \frac{966.5\ \text{mg}}{\text{L}} = 18{,}287{,}726\ \text{Kg/Yr}$$

However, the drop in the level of the Salton Sea resulting from the potential flow reduction will tend to increase salinity because of the overall reduced water volume in the Sea. The Salton Sea currently has 4.07 $\times 10^{11}$ Kg of salt. As part of the impact evaluation, the effect of volumetric change and salinity concentration were studied. The salinity concentrations presented below were developed using a simple mass balance of the Sea. Other well-developed models were not available at the time this report was prepared. The following presents the differential change in salinity:

At 600 lps reduction: 87 mg/L annual increase in Salinity to Salton Sea=

$$\frac{87\ \text{mg/L}}{44{,}000\ \text{mg/L Salton Sea baseline salinity}} = 0.2\ \%\ \text{annual increase}$$

At 880 lps reduction: 127 mg/L annual increase in Salinity to Salton Sea =

$$\frac{127\ \text{mg/L}}{44{,}000\ \text{mg/L Salton Sea baseline salinity}} = 0.3\ \%\ \text{annual increase}$$

The Reclamation Model (CH2M HILL, 2002) predicts that under future "baseline" conditions (i.e. 1.23 million AF/y), the salinity of the Sea will reach 60,000 mg/L TDS in 2023, and ultimately will rise as high as 86,000 mg/L TDS by the year 2077. The Salton Sea Restoration Project DRAFT Alternatives Appraisal Report estimates that with flows into the Salton Sea remaining at 1.363 million AF/y, the salinity of the Sea will reach 60,000 mg/l around 2047. Conservatively assuming that the reduced flows will speed the rate of salinity increase by 0.2-0.3% for the three years it takes for the Sea to regain equilibrium, the salinity will reach the 60,000 mg/l within the same year as these projected dates.

In addition to being highly saline, the Salton Sea is highly eutrophic. The eutrophication process is a natural process that results when high loadings of nutrients, which come from organic matter in the sea (algae bloom, dead fish, decaying plants, etc.) and from agricultural and municipal sewage, slaughterhouse runoff, etc., enter the Sea. High levels of nutrients foster algae blooms, which pull oxygen from the water and cause fish die-offs. In the Salton Sea, phosphorus is considered the limiting nutrient. According to the Salton Sea Authority, recent studies indicate that the most important first step to reduce algae blooms is to reduce phosphorus inflows to the Sea.

Table 4-4 demonstrates that approximately a 10% reduction of both total phosphorus orthophophate loads will result in the Salton Sea due to the 600 lps reduction of flow from the New River. This is because municipal wastewater is extremely rich in nutrients. The reduction of phosphorus will have a beneficial impact to the water quality of the Salton Sea, which is listed under the Clean Water Act's 303(d) list as "water quality impaired" due to nutrients.

The diversion and treatment of the 600 lps to 880 lps of Mexicali II wastewater will also decrease the organic, microbiological, nutrients and other pollutant loads to the New River, thus indicating a beneficial impact. Pollutant reductions in the New River at the International Boundary at Calexico were estimated. These calculations can be found in Table 4-5. Biological oxygen demand (BOD_5), total suspended solids (TSS), and orthosphate load reductions are as follows:

- BOD_5 load reductions = 43%
- TSS load reductions = 65%
- Orthophosphate load reduction = 25%

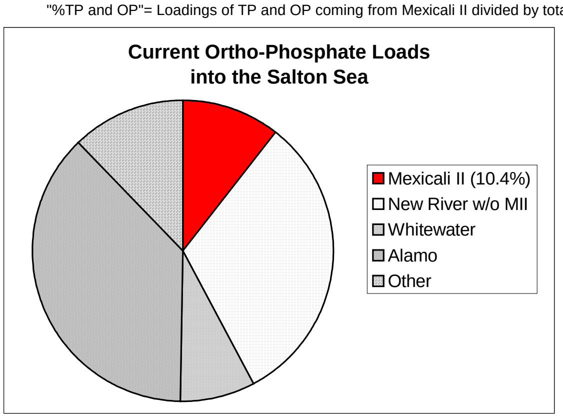
Table 4-4. Reduction in Phosphorus at the Salton Sea

	Flow			TP(mg/l)	TP (kg/yr)	%TP	OP (mg/l)	OP (kg/yr)	%OP
	Q (af/yr)	Q (lps)	Q (MGD)						
Mexicali II present	15,342	600	13.7	7.1 [2]	134,361	**9.8%**	4.6 [2]	87,051	**10.4%**
Mexicali II (MII) design	22,501	880	20.1	7.1 [2]	197,062	**14.3%**	4.6 [2]	127,674	**15.3%**
New River at Boundary	154,649	6,048	138.1				1.8 [4]	343,368	
New River at Sea	410,166 [1]	16,041	366.2	1.11 [3]	561,594		0.70 [3]	352,135	
Whitewater River	76,206	2,980	68.0	0.87 [3]	81,310		0.71 [3]	66,740	
Alamo River	623,678	24,391	556.8	0.72 [3]	553,132		0.41 [3]	313,878	
Other	202,036	7,901	180.4	0.72 [3]	179,183		0.41 [3]	101,679	
total into Salton Sea	1,312,086	43,413	991.0		1,375,220			834,431	

1. This flow assumes a 15,969 af/yr (625 lps) flow reduction due to potential diversion of water to power plant in Mexicali.
2. 1998 Mexicali effluent samples from "Flow Monitoring and Sampling Wastewater Characterization," CH2MHill, 1998
3. From Table 6-1 in "Bioavailability, Resuspension, and Control of Sediment-Borne Nutrients in the Salton Sea, Hodren and Montano, 2002.
4. From http://www.swrcb.ca.gov/rwqcb7/newriver/dataindex.html ('01-'03)

Conclusion:keeping Mexicali II flows out of New River will reduce total P and Ortho-Phosphate loading to Salton Sea by 10-15%

"Q"= flow
"TP"= Total Phosphorous
"OP"=Ortho-Phosphate
"%TP and OP"= Loadings of TP and OP coming from Mexicali II divided by total loads into Salton Sea



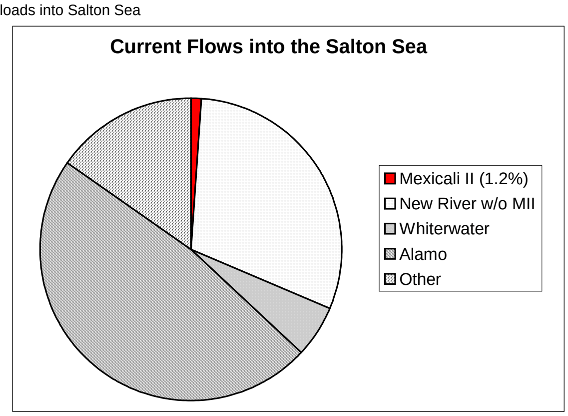


Table 4-5. Reduction in BOD, OP and TSS in the New River at the International Boundary at Calexico

New River							
date (12-month avg)	**New River BOD concentrations at International Boundary (mg/l)**	**New River OP conc. (mg/l)**	**New River TSS Conc.**	**Flow of New River at Boundary (lps)**	**New River BOD load (kg/yr)**	**New River OP load**	**MII TSS load**
Apr-00	27.00	n/a	53.00	6048	5149703	n/a	10108676
Apr-01	39.00	1.77	52.00	6048	7438459	337782	9917946
Apr-02	16.10	2.22	37.10	6048	3070749	423992	7076073
Apr-03	36.10	1.42	45.00	6048	6885343	270073	8582838
average	29.55	1.80	44.70	6048	5636063	343949	8525619
Mexicali II							
Mexicali II	**MII BOD concentration**	**MII OP conc. (mg/l)**	**MII TSS conc.**	**Flow from MII (lps)**	**MII BOD Load (kg/yr)**	**MII OP Load**	**MII TSS Load**
avg estimates	129.21	4.60	293.00	600	2444860	87039	5544029
% reduction of BOD_5 loads at the International Boundary							**43%**
% reduction of OP loads at the International Boundary							**25%**
% reduction in TSS loads at International Boundary							**65%**

Sources:
-New River BOD and OP concentrations from http://www.swrcb.ca.gov/rwqcb7/newriver/dataindex.html
-Mexicali II BOD, OP, TSS concentrations from Flow Monitoring and Sampling Wastewater Characterization, CH2MHill, 1997, Gonzalez Ortega Influent (TSS is average of Zaragoza and Gonzalez Ortega influent)
-New River flow data, USGS, average of '91-'01 flows.

4.1.1.1 Mitigation

The impacts on water flow and water quality are considered less than significant and no mitigation is required.

4.1.1.2 Significance after Mitigation

None would occur.

4.1.1.3 Cumulative Effects

Because this EA makes the conservative assumption that the power plants in Mexicali are already operating at full capacity, and therefore that flows in the New River are already 16,000 AF/y less than they have been from the average of 1991 to 2001, "cumulative" effects from the power plants combined with this project have already been considered in the analysis above.

If, in the future, major wastewater reuse or water conservation programs are implemented, potential cumulative impacts on Salton Sea water levels and quality could occur. One of these proposed projects is the 200,000 AF/y transfer of water from the Imperial Irrigation District to the City of San Diego. If this transfer occurs, mitigation measures will be proposed to address these impacts. (See EIS IID [CH2MHILL 2002] for discussion of potential impacts and proposed mitigation measures.)

4.1.2 Impacts of Alternative 2

Impacts on water flow and water quality are identical to the preferred alternative above.

4.1.2.1 Mitigation

The impacts on water flow and water quality are not considered significant and no mitigation is required.

4.1.2.2 Significance after Mitigation

Not applicable.

4.1.2.3 Cumulative Effects

Cumulative effects would be identical to the preferred alternative.

4.1.3 No Action Alternative

The No Action Alternative would likely cause existing wastewater discharge to the New River to further degrade as flows from Mexicali II service area increase, although it is unclear how Mexico would ultimately treat and dispose of this wastewater. The continuing discharge of untreated wastewater into the New River will result in the persistence of pollutants and public health concerns. Continued release of raw sewage, which contains high levels of nutrients, pathogens, and toxic substances will further degrade the water quality of the river and hinder downstream use. The Regional Board's TMDL for Pathogens in the New River and the bi-national standards set by the International Boundary and Water Commission (IBWC) U.S. and Mexican Sections for biological oxygen demand, total suspended solids, and pathogens would continue to be exceeded. Furthermore, high loads of phosphorous would continue to contribute to eutrophic conditions at the Salton Sea.

4.1.3.1 Mitigation

Not applicable.

4.1.3.2 Significance after Mitigation

Not applicable.

4.1.3.3 Cumulative Effects

Not applicable.

4.2 Biological Resources

The following section presents an assessment of direct and indirect impacts on biological resources associated with effects of implementation of any the proposed project alternatives. Direct impacts would occur from clearing and grading of native vegetation, if present. Indirect impacts would include habitat fragmentation and isolation, edge effects, invasion by exotic species, and increased human activity. Impacts to Biological resources may be considered significant if the proposed action:

- Substantially affects a sensitive, rare, or endangered species of animal or plant, or the habitat of the species.
- Interferes substantially with the movement of any resident or migratory fish and wildlife species.

- Substantially diminishes habitat for fish, wildlife, or plants.

4.2.1 Impacts of the Preferred Alternative

Construction of this alternative will occur in Mexico; therefore, no direct impacts will occur in the United States. No direct impact on terrestrial resources will occur in the United States and impacts to terrestrial resources in Mexico would be limited to the construction of the plant and associated infrastructure. Construction impacts would be within previously disturbed areas. Implementation of the preferred alternative would result in the elimination of up to 880 lps of untreated sewage flow into the New River, thus the water quality of the New River would marginally improve as it flows through the United States.

The diversion of between 600 lps to 880 lps of raw sewage inflow to the New River will reduce the total inflow into the Salton Sea by 1.17%-1.71%. This amount of flow reduction would likely return the Sea to 1982 – 1992 levels. It is within the range of annual variability for the New River and would not have a significant effect on water dependent vegetation or wildlife associated with the riparian corridor. No significant impact on aquatic resources would be expected. As indicated in the IID Water Conservation and Transfer Project EIS (CH2M HILL 2002), under "baseline" conditions, salinity levels with no project are expected to exceed the 60,000 mg/l threshold by the year 2023. This project would cause the Sea to reach this level within that same year.

In addition to being highly saline, the Salton Sea is highly eutrophic, meaning that it contains high levels of nutrients. This can lead to oxygen depletion in the Sea, which occurs after excessive algal growth, subsequent senescence, and decomposition by bacteria. High-standing stock of algae and enhanced decomposition consume oxygen and produce oxygen deficiencies, particularly in deeper regions of the Sea. This lack of oxygen can adversely affect plant and animal communities and frequently causes fish die-offs.

The diversion and treatment of the 600 lps to 880 lps of Mexicali II wastewater will decrease the organic, microbiological, nutrients and other pollutant loads to the New River, which would have a net beneficial impact to the New River. Calculations in 4.1.1 demonstrate that a 10% reduction of total phosphorus and orthophosphate loads will occur due to the 600 lps reduction of flow from the New River into the Salton Sea.

Additionally, based on significance criteria, only effects to candidate, sensitive or special status species or certain effects to native fish (i.e., nursery habitat, migratory routes) constitute significant biological impacts. Because all fish species are introduced, non-native species, the impacts are less than significant. No impacts to sensitive species or habitats would be expected under this alternative.

In addition to the benefit of the Mexicali II project to the U.S. from the removal of untreated sewage flowing in the New River across the International Boundary and the reduction of the nutrient loads flowing to the Salton Sea, an environmental benefit will result wastewater flowing south into the Rio Hardy to the Colorado River delta region.

This formerly vast wetlands region has shrunk in size from millions of acres to approximately 340,000 acres of natural area, most of which is now protected in the Biosphere Reserve of the Gulf of California and Delta of the Colorado River (Glenn, et al., 2001). Research indicates that a base flow of approximately 35,000 acre-feet of water/ per year with somewhat larger pulses every 4 years or so would maintain 120,000 acres of wetlands and riparian vegetation within the delta (Glenn et al., 1999 in Pitt, 2001). The project may send from 15,000 - 25,000 acre-feet of treated water to the delta, or approximately 40-70% of potential baseline flow.

4.2.1.1 Mitigation

No mitigation would be required since no significant impacts to biological resources are predicted to occur.

4.2.1.2 Significance after Mitigation

No significant impacts to biological resources are predicted, and no mitigation would be required.

4.2.1.3 Cumulative Effects

Because this EA makes the conservative assumption that the power plants in Mexicali are already operating at full capacity, and therefore that flows in the New River are already 16,000 AF/y less than they have been from the average of 1991 to 2001, "cumulative" effects from the power plants combined with this project have already been considered in the analysis above.

If, in the future, major wastewater reuse or water conservation programs are implemented, potential cumulative impacts on Salton Sea water levels and quality could occur. One of these proposed projects is the 200,000 AF/y transfer from the Imperial Irrigation District to the City of San Diego.

In particular, the IID EIS (CH2MHILL 2002) found effects to piscivorous bird from accelerated decline in fish abundance, effects to nesting/roosting sites from an accelerated decline in water surface elevation, effects to species associated with tamarisk scrub from greater magnitude and rate of decline in water surface elevation, and effects to pupfish from accelerated increase in salinity levels. If this transfer occurs, mitigation measures will be proposed to address these impacts.

4.2.2 Impacts of Alternative 2

This alternative is generally identical to the Preferred Alternative except that the Wastewater Treatment Plant would be located at a different site in Mexico. Impacts are identical to Alternative 1.

4.2.2.1 Mitigation

No mitigation would be required since no impacts to biological resources are predicted to occur.

4.2.2.2 Significance after Mitigation

Not applicable.

4.2.2.3 Cumulative Effects

Cumulative effects would be identical to the preferred alternative.

4.2.3 No Action Alternative

Continued release of untreated sewage, pathogens, nutrients, oxygen-demanding organic matter, and toxic substances could further degrade aquatic habitat conditions, impair the survival of aquatic organisms, and potentially lead to fish mortality in the New River and Salton Sea. For example, the loadings of phosphorous to the Salton Sea would increase by 5% in the next ten years (Table 4-4).

4.2.3.1 Mitigation

Because no physical land use changes would occur (e.g., no new construction), no impacts to terrestrial resources would occur, and no mitigation would be required. However, alternative proposals for treating sewage flow from Mexico would eventually need to be sought to address the continued water quality degradation in the New River.

4.2.3.2 Significance after Mitigation

Unless other proposals for cleaning up the New River are considered, the projected increase in sewage flow into the New River drainage would further degrade the water quality in the New River and would present a significant conflict with the goals of the Salton Sea Restoration Plan.

4.2.3.3 Cumulative Effects

The continued degradation of water quality in the New River would have the potential to affect the successful implementation of the Salton Sea Restoration Plan.

4.3 Cultural Resources

4.3.1 Impacts of the Preferred Alternative

The agency is required by the regulations (36 CFR Part 800) implementing Section 106 of the National Historic Preservation Act of 1966 (as amended) to identify all cultural properties within the area of potential effect that meet the criteria for inclusion in the National Register of Historic Places and to afford the Advisory Council on Historic Preservation an opportunity to comment on those actions that affect them. This cultural resources assessment has been conducted to assist the agency with the identification of cultural properties that appear to qualify for listing on the National Register of Historic Places and that may be affected by project alternatives located on the United States side of the International Border.

The Cultural Resource Assessment considers the effects of proposed project facilities and improvements that would be constructed in the United States. No construction will occur in the United States, therefore, the United States would not be affected by the preferred alternative or any other alternative.

This project should also be in concurrence with the Instituto Nacional de Antropología e Historia (INAH) in Mexico. Although reconnaissance of the general area of the proposed locations of the treatment plants in Mexico revealed no cultural resources, concurrence with this finding should be obtained from INAH once the final location and footprint of the plant is determined. Pedestrian survey of the area may be required.

4.3.1.1 Mitigation

No mitigation is required in the U.S. and none expected in Mexico.

4.3.1.2 Significance after Mitigation

None would occur.

4.3.1.3 Cumulative Effects

Not applicable.

4.3.2 Impacts of Alternative 2

Since no construction would occur in the United States, under 36 CFR Part 800, no cultural resources assessment is necessary (see section 4.3.1 for more details).

This project should also be in concurrence with the Instituto Nacional de Antropología e Historia (INAH) in Mexico. Although reconnaissance of the general area of the proposed locations of the treatment plants in Mexico revealed no cultural resources, concurrence with this finding should be obtained from INAH once the final location and footprint of the plant is determined. Pedestrian survey of the area may be required.

4.3.2.1 Mitigation

No mitigation is required in the U.S. and none expected in Mexico.

4.3.2.2 Significance after Mitigation

None would occur.

4.3.2.3 Cumulative Effects

Not applicable.

4.3.3 No Action Alternative

Since no construction would occur in the United States or Mexico, no cultural resources assessment is necessary and no impacts to cultural resources would occur.

4.3.3.1 Mitigation

No mitigation is required.

4.3.3.2 Significance after Mitigation

None would occur.

4.3.3.3 Cumulative Effects

Not applicable.

4.4 Land Use

4.4.1 Impacts of the Preferred Alternative

The preferred alternative would not require construction of any structural improvements in the United States; thus, no land use changes would occur in the United States. Implementation of the preferred alternative would result in the elimination of up to 880 lps of raw sewage flow into the New River, thus the water quality of the New River would marginally improve as it flows through the United States. Improved water quality of the New River would be compatible with the goals of the Imperial County General Plan, Calexico General Plan, and Salton Sea Restoration Project.

4.4.1.1 Mitigation

No mitigation would be required since no land use impacts are predicted to occur.

4.4.1.2 Significance after Mitigation

No significant land use impacts are predicted, and no mitigation would be required.

4.4.1.3 Cumulative Effects

If, in the future, major wastewater reuse or water conservation programs are implemented, potential cumulative impacts on Salton Sea water levels could occur. One of these proposed projects is the 200,000 acre-feet water transfer from the Imperial Irrigation District to the City of San Diego.

4.4.2 Impacts of Alternative 2

This alternative is identical to the Preferred Alternative except that the Wastewater Treatment Plant would be located at a different site in Mexico. Impacts are identical to Alternative 1.

4.4.2.1 Mitigation

No mitigation would be required since no land use impacts are predicted to occur.

4.4.2.2 Significance after Mitigation

No significant land use impacts are predicted, and no mitigation would be required.

4.4.2.3 Cumulative Effects

Cumulative effects would be identical to the preferred alternative.

4.4.3 No Action Alternative

The No Action alternative would provide no new treatment systems or improvements to the existing wastewater treatment systems for sewage flows generated in Mexico. The wastewater flowing into the New River drainage would increase as the population and industrial activities in the City of Mexicali increase. While there would be no land use changes in the United States under this alternative, several of the goals of Imperial County and Calexico General Plans for cleaning-up the New River would not be realized. While not in direct conflict with the Salton Sea Restoration Project, the No Action alternative would not contribute to the overall goals of the Salton Sea Restoration Project, one of which is to help improve water quality of the Sea.

4.4.3.1 Mitigation

Because no physical land use changes would occur (e.g., no new construction), no land use impacts would occur, and no mitigation would be required. However, to meet the

County and Calexico's goals for addressing New River pollution, alternative proposals for treating sewage flow from Mexico would eventually need to be sought.

4.4.3.2 Significance after Mitigation

Unless other proposals for cleaning up the New River are considered, the projected increase in sewage flow into the New River drainage over time would represent a significant conflict with the goals of the Imperial County and City of Calexico General Plans.

4.4.3.3 Cumulative Effects

The continued flow of raw sewage into the New River would remain in conflict with the land use plans for Calexico and Imperial County. The continued poor water quality conditions would prevent development in the areas adjacent to the New River.

4.5 Traffic and Transportation

4.5.1 Impacts of the Preferred Alternative

The preferred alternative involves improvements to wastewater treatment in Mexico. No structural improvements will be built in the Unites States, therefore no increase in long-term traffic would occur in the United States. However, there is a potential for a temporary increase in traffic levels along the main highways that lead to the Ports of Entry in the City of Calexico and in Mexicali. Such traffic would be intermittent and short-term, thus no significant long-term traffic impacts would be expected.

4.5.1.1 Mitigation

If a temporary increase in traffic levels occur, the construction related traffic generated in the United States en route to the City of Mexicali could use the Port of Entry east of the City of Calexico as necessary to help reduce short-term traffic impacts along SR 111 south of SR 98.

4.5.1.2 Significance After Mitigation

Potential short-term, construction vehicle traffic impacts would likely be reduced. No long-term traffic impacts would occur from this alternative.

4.5.1.3 Cumulative Effects

None would occur.

4.5.2 Impacts of Alternative 2

Alternative 2 is identical to the preferred alternative except that the site location is different in Mexico. Therefore, the impacts are identical to Alternative 1.

4.5.2.1 Mitigation

As in the preferred alternative, if a temporary increase in traffic levels occur, the construction related traffic generated in the United States en route to the City of Mexicali could use the Port of Entry east of the City of Calexico as necessary to help reduce short-term traffic impacts along SR 111 south of SR 98.

4.5.2.2 Significance after Mitigation

Potential short-term, construction vehicle traffic impacts would likely be reduced. No long-term traffic impacts would occur from this alternative.

4.5.2.3 Cumulative Effects

None would occur.

4.5.3 No Action Alternative

The no action alternative would provide no new improvements in Mexico therefore, no new construction would occur and thus, no changes in traffic would occur.

4.5.3.1 Mitigation

None required.

4.5.3.2 Significance After Mitigation

None would occur.

4.5.3.3 Cumulative Effects

None would occur.

4.6 Socioeconomics

4.6.1 Impacts of the Preferred Alternative

The Preferred Alternative involves improvements to the wastewater treatment system in Mexico to handle increased sewage flows. The land cost for this alternative is $0.88 U.S. Dollars per square meter. No new short-term construction employment or long-term employment would be generated in the United States. However, improvement in the New River water quality could provide incentive to develop potential community and recreational enhancements in south central Imperial County, thus generating some degree of economic enhancement to the region.

Executive Order 12898 requires that agencies incorporate environmental justice into their missions by identifying and addressing disproportionately high and adverse human health or environmental effects of their proposed programs and actions on minorities and low-income populations and communities. The City of Calexico has a high proportion of Latino and low-income households. Because the proposed project is intended to improve water quality and public health, all local residents will benefit from implementation of the Preferred Alternative. The action to collect, treat, and discharge sewage that would otherwise contaminate the New River Valley is consistent with this policy directive.

4.6.1.1 Mitigation

No mitigation would be required, since no adverse socioeconomic impacts are predicted to occur.

4.6.1.2 Significance after Mitigation

No significant socioeconomic impacts are predicted, and no mitigation would be required.

4.6.1.3 Cumulative Effects

Cumulative effects are not expected.

4.6.2 Impacts of Alternative 2

This alternative is identical to the Preferred Alternative except that the Wastewater Treatment Plant would be located at a different site in Mexico. The land cost for this site is $1.07 U.S. Dollars per square meter. Similar to the Preferred Alternative, the treated effluent from this plant would flow south to the Gulf of California, instead of into the New River drainage basin.

No new short-term construction employment or long-term employment would be generated in the United States. Also, as with the Preferred Alternative, improvements in water quality of the New River would allow for enhancement of community and recreational areas in the City of Calexico and other areas of south central Imperial County that could bring about some enhancement to the local economy.

4.6.2.1 Mitigation

No mitigation would be required, since no adverse socioeconomic impacts are predicted to occur.

4.6.2.2 Significance after Mitigation

No significant socioeconomic impacts are predicted, and no mitigation would be required.

4.6.2.3 Cumulative Effects

Cumulative effects are not expected.

4.6.3 No Action Alternative

The No Action alternative would not provide any new treatment systems or improvements to the existing wastewater treatment systems for sewage flows generated in Mexico. Wastewater would continue flowing into the New River drainage at increasing levels as the population and industrial activities in the City of Mexicali increase. No new jobs would be created, and potential community and recreational improvements associated with the New River would not likely be developed.

Continued degradation of New River water quality could have a potential negative socioeconomic effect, particularly for the City of Calexico. The local population would be continually aware of the health concern via the City’s posting of signs. Also, odors and negative visual effects would likely increase. Further, the western portion of the city currently contains a fair share of the area’s waste disposal facilities, including the County landfill and the city’s sewage treatment facilities, as well as the water supply treatment facilities and the Calexico airport. As a result, existing industrial, commercial, and residential land uses in proximity to the river (primarily the southwestern and western portions of the city) could face potential decreases in property values as the

New River water quality continues to degrade. Also, there would be little potential for the attraction of new businesses or other community developments in this southwestern area of the city. Thus, continual degradation of the New River water quality could limit or prevent potential economic development and could decrease property values in western Calexico, which would be considered a significant socioeconomic impact.

4.6.3.1 Mitigation

No mitigation measures are available for the No Action Alternative. Other alternatives for treating New River flows would have to be sought.

4.6.3.2 Significance after Mitigation

Unless other proposals for cleaning up the New River are considered, the projected increase in sewage flow into the New River drainage would be expected to have a significant socioeconomic impact to the southwestern and western portions of the City of Calexico.

4.6.3.3 Cumulative Effects

Cumulative effects are not expected under the No Action Alternative.

4.7 Public Health and Safety

4.7.1 Impacts of The Preferred Alternative

The improved wastewater treatment relative to current conditions would substantially improve the water quality in the New River, particularly with reduction in fecal coliform bacteria and other pathogens. A potential reduction in illnesses resulting from water-borne pathogens could occur on both sides of the border. All wastes generated through water treatment processes would continue to be disposed of at facilities in Mexico. No facilities would be located in the United States.

4.7.1.1 Mitigation

None required.

4.7.1.2 Significance After Mitigation

No impacts would occur.

4.7.1.3 Cumulative Effects

None would occur.

4.7.2 Impacts of Alternative 2

Alternative 2 is identical to the preferred alternative except that the site location is different in Mexico. Therefore, the impacts are identical to Alternative 1.

4.7.2.1 Mitigation

None required.

4.7.2.2 Significance after Mitigation

No impacts would occur.

4.7.2.3 Cumulative Effects

None would occur.

4.7.3 No Action Alternative

No new improvement in wastewater treatment would be implemented in Mexico; therefore, no change would be expected from existing conditions relative to the conditions and quality of the water from the New River and the public health concerns associated with the contamination of the river.

4.7.3.1 Mitigation

Not applicable.

4.7.3.2 Significance after Mitigation

Not applicable.

4.7.3.3 Cumulative Effects

Not applicable.

4.8 Scenic, Visual, and Recreation

4.8.1 Impacts of the Preferred Alternative

No structural improvements would be constructed in the United States; thus, no direct changes to the visual landscape would occur. The projected 600 lps to 880 lps reduction in flow of untreated sewage to the New River over the build-out period would improve the water quality of the New River, which would enhance the scenic and recreational value of the New River.

Mitigation

No mitigation is required since no adverse scenic, visual, or recreation impacts are expected to occur.

4.8.1.1 Significance after Mitigation

No significant adverse scenic, visual, or recreation impacts are predicted, and no mitigation is required.

4.8.1.2 Cumulative Effects

Cumulative adverse scenic, visual, or recreation impacts are not expected to occur.

4.8.2 Impacts of Alternative 2

This alternative is identical to the Preferred Alternative except that the Wastewater Treatment Plant would be located at a different site in Mexico. Impacts are identical to Alternative 1.

4.8.2.1 Mitigation

No mitigation is required since no adverse scenic, visual, or recreation impacts are predicted to occur.

4.8.2.2 Significance after Mitigation

No significant adverse scenic, visual, or recreation impacts are predicted, and no mitigation is required.

4.8.2.3 Cumulative Effects

Cumulative adverse scenic, visual, or recreation impacts are not expected to occur.

4.8.3 No Action Alternative

The No Action alternative would not provide any new treatment systems or improvements to the existing wastewater treatment systems for sewage flows generated in Mexico. Wastewater would continue flowing into the New River drainage at increasing levels as the population and industrial activities in the City of Mexicali increase. While there would be no direct scenic, visual, or recreational changes in the United States under this alternative, the visual character of the New River would continue to deteriorate over time as increased levels of pollutants would continue to flow into the river.

4.8.3.1 Mitigation

Since no direct visual changes would occur (e.g., no new construction), no direct scenic, visual, or recreational impacts would occur, and no mitigation would be required. However, alternative proposals for treating sewage flow from Mexico would eventually need to be sought in order to minimize the potential for increased water pollution that could significantly impact the scenic character and recreational potential of the New River.

4.8.3.2 Significance after mitigation

Unless other proposals for cleaning up the New River are considered, the projected increase in sewage flow into the New River drainage would represent a significant impact to the scenic character and recreational potential of the New River.

4.8.3.3 Cumulative Effects

Cumulative adverse scenic, visual, or recreation impacts are not expected to occur.

4.9 Air Quality

This section analyzes potential impacts to ambient air quality conditions associated with each of the proposed alternative projects. Based on the ambient air quality standards shown in Table 3-2, the alternatives would result in significant air quality impacts if it:

- Creates violations of CAAQS or NAAQS
- Contributes measurably to existing or projected air quality violations of CAAQS or NAAQS
- Contributes to the delay in attainment of a CAAQS or NAAQS as specified in the Imperial County AQAP
- Exposes the public to airborne contaminants that do not have presumed safe exposures

4.9.1 Impacts of the Preferred Alternative

The Preferred Alternative will be constructed and operated in Mexicali. It is not likely that construction emissions would have a measurable impact on air quality in the United States or Mexico. Air emissions from operations of new treatment and pumping stations in Mexicali would contribute to existing degraded air quality emanating from the metropolitan area. Because of prevailing wind patterns, air emissions from the proposed facilities could enter the United States and contribute to existing degraded air quality conditions in Imperial County.

Potential benefits to air quality can be expected both within Calexico, because of decreased levels of Volatile Organic Compounds (VOCs) in the New River. Also, because large quantities of untreated sewage and nutrients will be removed, odors generated in the New River and the Salton Sea would decrease.

Wind patterns in the area generally align with the long axis of the Salton Sea. The prevailing wind direction during all seasons is from the northwest. During the spring and summer, winds from the east and southeast become a secondary component, while during the fall and winter, the secondary component is from the west and southwest. Wind speeds are generally moderate throughout the geographic subregion.

Implementation of the Proposed Project would result in a reduction of raw sewage flow in the New River of 600 lps and thus a reduction in the volume of water discharged to the Salton Sea. The total surface area of the Sea would decrease to average 1982 to 1992 levels, exposing up to 2,654 acres of currently submerged bottom sediments or playa.

The predicted decrease in Sea level and increase in exposed area would increase the potential for dust suspension. Spatial variations in sediment characteristics and soil erodibility, temporal variations in wind conditions, and variation in factors contributing to the formation of salt crusts prevent any reasonable quantitative estimate of emissions and associated impacts from the exposed shoreline. Therefore, a qualitative assessment of the potential for dust suspension is provided in this EA.

Several conditions at the Salton Sea currently exist or would be expected to exist in the future as a result of lowered Sea levels. Qualitatively, it is anticipated that the combination of moisture present in the unsaturated zone beneath the exposed playa, the probable formation of dried algal mats and stable efflorescent salt crusts consisting of chloride and sulfate salts, and the relatively low frequency of high wind events at the Salton Sea would inhibit the suspension of dust. It is likely, however, that these assumptions would not apply to all areas of exposed playa or shoreline at all times, so dust events could potentially occur.

Based on the factors influencing emissions at the Salton Sea as discussed above, the extent of any increases in dust emissions and associated increases in ambient concentrations of the nonattainment pollutant PM_{10} in the future, as shoreline conditions change, is unknown. On occasion existing concentrations of PM_{10} in the Salton Sea area violate national and state ambient air quality standards. Wind erosion of natural desert soils and vehicle travel over unpaved roads are expected to continue to represent the predominant of dust emissions around the Salton Sea.

To further consider the potential impact of emissions from the Salton Sea, a comparison was made to existing dry lakebeds where dust impacts have been observed. Fortunately, conditions found to produce dust storms on dry slat lakebeds, such as Owens Lake, were not found to be present at the Salton Sea. The following three primary factors would be expected to make the situation at the Salton Sea much less severe than Owens Lake:

- **Soil chemistry:** As a result of the relatively high salinity of ground water beneath the playa at the Salton Sea, formation of an efflorescent salt crust on the surface of the playa is likely to occur. The soil system at the Salton Sea is predominately sodium sulfate and sodium chloride. These salts do not change in volume significantly with fluctuations temperature, so the crust at the Salton Sea should be fairly stable and resistant to erosion. This anticipated situation at the Salton Sea is different from similar current situations at Owens and Mono Lakes, where a significant portion of the salinity is in the form of carbonates. The volume of carbonate salts is much more sensitive to temperature fluctuations, and desiccation of these salts produces fines that are readily suspended from playa at these lakes. Therefore, the salt crust on the exposed playa at the Salton Sea should be more stable and less emissive than Owens Lake. Also, distribution of mobile sand on the dry lakebed at Owens Lake is part of what drives high emissions rates, and comparable conditions are not expected at the Salton Sea.

- **Meteorology:** The frequency of high wind events at the Salton Sea is lower than at Owens Lake; therefore, the dust storms at the Salton Sea would be less frequent than at Owens Lake. Table 4-6 compares the frequency of high winds speeds at Owens Lake to that of Niland for the year 2000. The Owens Lake data were measured from Tower N3, which was located in the southern portion of the dry lakebed in an area of frequent large dust storms. The anemometer height was 10 meters at both the Owens Lake and the Niland stations. The wind frequency table for Owens Lake shows that the average hourly wind speed exceeded 8.5 m/s (19 mph) about 19.9 percent of the time in 2000. The wind speed exceeded 11.0m/s (25 mph) about 7.9 percent of the time in 2000. A comparison of these results for the Owens Lake station to those for the Niland station show that the Owens Lake station has a substantially greater frequency of higher wind speeds. Therefore, based on these data, the wind conditions of Owens Lake provide a greater potential for frequent or severe dust events than at the Salton Sea.

TABLE 4-6
Comparison of Wind Speed Frequency at 10 m Above the Ground Surface for Salton Sea and Owens Lake, Year 2000

	>8.5 m/s	.11.0 m/s

Site	(19 mph)	(25 mph)
Niland (near Salton Sea)	4.4%	1.4%
Tower N3 (Owens Lake)	18.9%	7.9%

- **Recession Rate:** The anticipated decline in water levels at the Salton Sea is predicted to be significantly slower than what occurred at Owens Lake. Natural processes may contribute more to controlling dust emissions at the Salton Sea than they have at Owens. These natural processes could include (a) the enabling of vegetation through development of soil conditions favorable to plant growth (including improvements in natural drainage); (b) development of native plant communities; (c) sequestration of sand into relatively stable dunes; and (d) formation of relatively stable crusts.

The IID EIS (CH2M HILL, 2002) stated: "To be conservative, this analysis concludes that windblown dust from exposed shoreline may result in potentially significant air quality impacts." The IID EIS was addressing the potential of exposing 66,000 acres of Salton Sea shoreline. This level of shoreline exposure has not occurred since 1925[4]. Alternatives 1 of this EA is expected to expose 2,654 acres of shoreline, which was previously exposed between the years 1982 to 1992. Therefore any impacts are expected to be less than significant.

4.9.1.1 Mitigation

Implementation of appropriate control technologies on stationary sources (pump stations, generators, etc.) to the extent practicable would reduce emissions from new facilities and limit contributions to pollutant levels in Mexicali and north of the International Boundary. Since impacts are less than significant no specific mitigation measures are required.

4.9.1.2 Significance after Mitigation

The implementation of control technologies would reduce the Preferred Alternative's contribution to emissions in Mexicali and north of the International Boundary by an incremental amount to below a level of significance.

4.9.1.3 Cumulative Effects

Future water conservation and/or water reuse projects such as the transfer of water from the Imperial Irrigation District to the City of San Diego will further the sea levels. This transfer could expose thousands of additional acres of Salton Sea shoreline. The result could be potential air quality problems such as:

- blowing dust,
- seaside homes abandoned far from the Sea, and
- increased concentrations of salts and nutrients (http://www.saltonsea.ca.gov/thesea.htm).

Should this transfer project move forward, mitigation measures will be proposed to address the effects from that project (see Section 3.7 of IID EIS).

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[4] Salton Sea Atlas, University of Redlands,2001, p. 28.

4.9.2 Impacts of Alternative 2

This Alternative is identical to the Preferred Alternative except that the Wastewater Treatment Plant would be located at a different site in Mexico. See 4.9.1 above for a complete discussion of potential impacts.

4.9.2.1 Mitigation

See Section 4.9.1.1.

4.9.2.2 Significance After Mitigation

See Section 4.9.1.2.

4.9.2.3 Cumulative Effects

Significant cumulative air quality impacts are not expected to occur as a result of this project. See 4.9.1.3 for a complete discussion.

4.9.3 No Action Alternative

By not constructing and operating new treatment facilities on either side of the International Boundary, no new emissions would be generated. Odors would continue to increase from the New River and the Salton Sea.

4.9.3.1 Mitigation

No mitigation is required since no adverse impacts to air quality are predicted to occur.

4.9.3.2 Significance After Mitigation

No significant adverse impacts to air quality are predicted, and no mitigation is required.

4.9.3.3 Cumulative Effects

Not applicable.

4.10 Geology, Seismicity, and Soils

The following section focuses on direct geologic/seismic impacts associated with the implementation of any of the proposed project alternatives. Geologic and seismic impacts are associated with public or human occupancy of structures (structures designed for 2,000 or more person-hours per year) such as:

- Failure of manufacture slopes (e.g., landslides, shear zones, sloughing)
- Differential settlement due to improper fills or subsidence
- Ground rupture, ground shaking, and/or liquefaction due to improper siting of buildings too near earth quake faults or noncompliance with seismic construction standards

4.10.1 Impacts of the Preferred Alternative

No adverse impacts to geology, seismicity, and soils are expected to occur in the United States or Mexico.

4.10.1.1 Mitigation

No mitigation is required since no adverse impacts to geology, seismicity, and soils are predicted to occur.

4.10.1.2 Significance After Mitigation

No significant adverse impacts to geology, seismicity, and soils are predicted, and no mitigation is required.

4.10.1.3 Cumulative Effects

Cumulative effects to geology, seismicity, or soils are not expected to occur.

4.10.2 Impacts of Alternative 2

No adverse impacts to geology, seismicity, and soils are expected to occur in the United States or Mexico.

4.10.2.1 Mitigation

No mitigation is required since no adverse impacts to geology, seismicity, and soils are predicted to occur.

4.10.2.2 Significance After Mitigation

No significant adverse impacts to geology, seismicity, and soils are predicted, and no mitigation is required.

4.10.2.3 Cumulative Effects

Cumulative effects to geology, seismicity, or soils are not expected to occur.

4.10.3 No Action Alternative

By not constructing and operating new treatment facilities on either side of the International Boundary, no geologic or seismic hazards would become issues; therefore, no impacts would accrue.

4.10.3.1 Mitigation

No mitigation is required since no adverse impacts to geology, seismicity, and soils are predicted to occur.

4.10.3.2 Significance after Mitigation

No significant adverse impacts to geology, seismicity, and soils are predicted, and no mitigation is required.

4.10.3.3 Cumulative Effects

Cumulative effects to geology, seismicity, or soils are not expected to occur.

4.11 Noise

4.11.1 Impacts of the Preferred Alternative

This alternative proposes improvements to the wastewater treatment systems in Mexico to handle sewage flows. No structural improvements would be built in the United States. Thus, no short-term construction noise or long-term operational noise would occur in the United States. The short tern noise impacts in Mexico are not considered significant and there will be no long-term noise impacts.

4.11.1.2 Mitigation

None required.

4.11.1.3 Significance after Mitigation

No impacts would occur

4.11.1.3 Cumulative Effects

None would occur.

4.11.2 Impacts of Alternative 2

As in the preferred alternative no short-term construction noise or long-term operational noise would occur in the United States. The short-term noise impacts in Mexico are not considered significant and there will be no long term noise impacts in Mexico.

4.11.2.1 Mitigation

None required.

4.11.2.3 Significance after Mitigation

No impacts would occur

4.11.2.3 Cumulative Effects

None would occur.

4.11.3 No Action Alternative

The No Action alternative would provide no new treatment systems or improvements to the existing wastewater treatment systems for sewage flows generated in Mexico. No new construction would occur; thus, no changes in the noise environment would occur.

4.11.3.1 Mitigation

None required.

4.11.3.2 Significance after Mitigation

None would occur.

4.11.3.3 Cumulative Effects

None would occur.

4.12 Energy

4.12.1 Impacts of the Preferred Alternative

This alternative involves improvements to wastewater treatment systems in the City of Mexicali, Mexico. Energy required to operate the treatment facilities would be provided by a utility in Mexico. No increase in energy consumption in the United States would occur and the increase in energy consumption in Mexico would not be significant.

4.12.1.1 Mitigation

No mitigation is required since no adverse impacts to energy production or consumption are predicted to occur.

4.12.1.2 Significance after Mitigation

No significant energy production or consumption impacts are predicted and no mitigation would be required.

4.12.1.3 Cumulative Effects

Cumulative effects to energy production or consumption are not expected to occur.

4.12.2 Impacts of Alternative 2

Similar to the Preferred Alternative, Alternative 2 involves improvements to wastewater treatment systems in Mexico. Energy required to operate the treatment facilities would be provided by a utility in Mexico. No increase in energy consumption in the United States would occur and the increase in energy consumption in Mexico would not be significant.

4.12.2.1 Mitigation

No mitigation is required since no adverse impacts to energy production or consumption are predicted to occur.

4.12.2.2 Significance after Mitigation

No significant energy production or consumption impacts are predicted and no mitigation would be required.

4.12.2.3 Cumulative Effects

Cumulative effects to energy production or consumption are not expected to occur.

4.12.3 No Action Alternative

The No Action alternative would not provide any new treatment systems or improvements to the existing wastewater treatment systems for sewage flows generated in the City of Mexicali, Mexico. No changes in energy consumption or demand would occur.

4.12.3.1 Mitigation

No mitigation is required since no adverse impacts to energy production or consumption are predicted to occur.

4.12.3.2 Significance after Mitigation

No significant energy production or consumption impacts are predicted and no mitigation would be required.

4.12.3.3 Cumulative Effects

Cumulative effects to energy production or consumption are not expected to occur.

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Appendix
Compliance with Applicable Laws and Regulations

A.1 Federal Laws and Regulations

A.1.1 National Environmental Policy Act of 1969, as Amended

U.S. EPA and USIBWC have prepared this EA to assess impacts associated with the construction and operation of additional wastewater treatment facilities to serve Mexicali, Mexico. This EA has been prepared to evaluate the potential environmental effects of the proposed Mexicali project in accord with the BECC requirements for Step II criteria for project certification. This EA has been developed and prepared in accordance with the National Environmental Policy Act of 1969, as amended (42 U.S.C. 432 et seq.).

A.1.2 Clean Water Act of 1977, as Amended (Public Law 95-217)

Section 402 of the Clean Water Act establishes the National Pollutant Discharge Elimination System permitting program. All point source dischargers are required to obtain and comply with the provisions of an NPDES permit for any discharge of pollutants into waters of the United States (e.g., oceans, lakes, or streams). NPDES permits must contain discharge limitations based on the more stringent of the applicable state or federal technology-based requirements and water quality standards. Section 402 of the Clean Water Act establishes the NPDES permitting program. Subsection (a)(5) of Section 402 specifies that the Administrator (U.S. EPA) may delegate authority to issue permits for discharges to the state. As allowed per this subsection, U.S. EPA has delegated NPDES permitting authority to the Regional Water Quality Control Board (RWQCB).

Because of the location of the proposed treatment plants, discharges to the New River would not occur. Therefore, the RWQCB would not be the authority issuing the discharge permits for the Mexicali WWTP under either the Preferred Alternative or Alternative 2.

A.1.2.1 Antidegradation Policy of the Clean Water Act (40 CFR 131.12)

This policy requires that an antidegradation analysis be performed for projects that will result in the degradation of water quality. A project that deteriorates the quality of the receiving waters cannot be allowed if the receiving waters do not meet state water quality standards. The applicable water quality standards are found in the Quantitative Standards of Minute 264 of the Mexican / American Water Treaty and the Colorado River Basin Plan promulgated by the RWQCB. The New River does not meet the Basin Plan standards and is considered a highly contaminated receiving water.

Because the discharge is to a highly degraded receiving body of water, and the discharge will be of sufficient quality to improve the water quality of the receiving environment, the project meets the antidegradation requirements. The antidegradation policy can be met if the following conditions are satisfied:

- The project is necessary to accommodate important economic or social development in the area in which the waters are located.
- Water quality will remain adequate to ensure water quality sufficient to fully protect existing uses.
- The highest statutory and regulatory requirements for all new and existing point sources and all cost-effective best management practices for non-point source control will be achieved.

The Preferred Alternative and Alternative 2 satisfy the first condition since the project would prevent the continuation of untreated sewage flowing into the New River that has impaired economic and social development in the Mexicali area and has limited the use of the river in both the United States and Mexico requiring the issuance of health warnings by the Imperial County Health Department.

The Preferred Alternative and Alternative 2 satisfy the second condition in that the proposed action would result in improved water quality in the United States and Mexico.

The Preferred Alternative and Alternative 2 satisfy the third condition because the project will collect and treat existing untreated point source discharges from Mexico.

A.1.3 Endangered Species Act of 1973, as Amended

Potential impact to federal listed species requires consultation with the USFWS or National Marine Fisheries Service (NMFS), as stated under Section 7 of the federal Endangered Species Act. If the USFWS or NMFS advises a federal agency that a listed species may be present in the area of a proposed agency action, the agency must conduct a biological assessment to determine whether its proposal is likely to affect any listed species. If the assessment concludes that a protected species may be adversely affected, the agency must initiate formal consultation with USFWS or NMFS. Based upon the results of the formal consultation, USFWS or NMFS must issue a written biological opinion. Consultation has not been initiated by U.S. EPA since this Environmental Assessment has found that this project will have no effects to threatened or endangered species.

A.1.4 Interagency Cooperation Endangered Species Act of 1973, as Amended; Final Rule

This final ruling, effective July 3, 1986, establishes the procedural regulations that govern interagency cooperation under Section 7 of the Endangered Species Act of 1973. The Act requires federal agencies, in consultation with and with the assistance of the secretaries of the Interior and Commerce, to ensure that their actions are not likely to jeopardize the continued existence of endangered or threatened species or result in the destruction or adverse modification of the critical habitat of such species.

A.1.5 Clean Air Act, as Amended

The federal Clean Air Act, as amended, was enacted for the purposes of protecting and enhancing the quality of the nation's air resources to benefit public health, welfare, and productivity. Construction activities are not proposed to occur within the United States. The proposed action to collect, treat, and discharge treated effluent south of the New River drainage basin could result in additional short-term (construction) pollutant emissions into a non-attainment area of the State under the Preferred Alternative and Alternative 2. The impacts of the proposed action are expected to be insignificant.

A.1.6 National Historic Preservation Act

The National Historic Preservation Act (NHPA) is managed in the state of California by the State Office of Historic Preservation. The NHPA requires an assessment of historic properties that may be located on a project site. Because the proposed actions would not occur in the United States, no historic properties would be affected.

A.1.7 Farmland Protection Policy Act

This act requires a federal agency proposing a major federal action to examine the effects of the action using the criteria of the act and, if any adverse impacts are identified, consider alternatives to lessen them and ensure that the action is consistent with state, local, and private programs to protect farmland. Impacts will not occur to farmland in the United States.

A.2 Executive Orders

A.2.1 Executive Order 11988—Flood Plain Management

This act requires a federal agency to consider alternatives to avoid adverse effects and incompatible development in the floodplain. The proponent agency must also design or modify the action to minimize potential harm within the floodplain, in coordination with the federal Water Resources Council and the Federal Emergency Management Agency. The discharge would occur south of the New River drainage basin.

A.2.2 Executive Order 11990—Protection of Wetlands

This act states that the proponent agency will avoid funding new construction located in wetlands unless the agency finds that there is no practicable alternative to such construction and that the proposal contains all practicable measures to minimize harm to wetlands. The Preferred Alternative and Alternative 2 would not cause construction activities in wetlands in the United States.

A.2.3 Executive Order 12114—Environmental Effects abroad of Major Federal Actions

This order, signed January 4, 1979, establishes procedures for federal agencies including U.S. EPA to consider the significant effects of their actions on the environment outside the United States consistent with foreign policy and national security policies of the United States. For purposes of the order, "environment" means the natural and physical environment—including global commons (oceans and the Antarctic), emissions or effluent discharges regulated by federal law in the United States because of their potential toxic effects on the environment to create a serious public health risk, and natural and ecological resources of global importance designated for protection or protected by international agreement—and excludes social, economic, and other environments.

A.2.4 Executive Order 12898—Environmental Justice

This order, signed February 11, 1994, requires agencies to incorporate environmental justice into their missions by identifying and addressing disproportionately high and adverse human health or environmental effects of their programs and policies on minorities and low-income populations and communities.

The New River valley has been impacted for many years by flows of sewage from Mexico. The action to collect, treat, and discharge sewage that would otherwise enter the United States and contaminate the New River valley and public recreation areas is consistent with this policy directive.

A.3 International Agreements

The joint International Boundary and Water Commission of the United States and Mexico has approved several international agreements including Minutes 264, 274, 288, and 294, to address sanitary conditions in the border region and water quality issues of the New River.

A.3.1 Minute No. 264: Recommendations for Solution of the New River Border Sanitation Problem at Calexico, California-Mexicali, Baja California Notre (August 26, 1980)

Minute No. 264 is directed at eliminating the domestic and industrial wastewater discharges to the New River at the International Boundary and the implementation of long-term actions for final disposal of the wastewaters and their conveyance away from the border. Further, the minute sets up a monitoring program for the New River and requires wastewater treatment works to have adequate standby and maintenance capacity to prevent discharges.

A.3.2 Minute No. 274: Joint Project for the Improvement of the Quality of Waters of the New River in Calexico, California - Mexicali, Baja California (April 15, 1987)

Minute No. 274 sets up a sanitation project with three components: acquisition of sewer system cleaning equipment; rehabilitation of two pumping stations; and construction of a new pumping station.

A.3.3 Minute No. 288: Conceptual Plan for the Long Term Solution to the Border Sanitation Problem of the New River at Calexico, California – Mexicali, Baja California (October 30, 1992)

Minute No. 288 notes that, due to the population growth in Mexicali, the measures implemented pursuant to Minute No. 271 are inadequate, and that partially treated and untreated industrial and domestic wastewater discharges into the New River and then flows north into the United States. Since adoption of Minute No. 274, treatment works and measures had been proposed or initiated, and Minute No. 288 determined that together these works and measures form a conceptual plan for the long-term solution to the border sanitation problem.

Minute No. 288 was followed by the Joint Report of the Principal Engineers on Construction of Immediate Need Projects of Longer Term and Facilities Planning in the Context of the Conceptual Plan for the Solution to the Border Sanitation Problem of the New River at Calexico, California and Mexicali, Baja California (October 25, 1995). The report recommended that the monitoring instituted under Minute No. 264 should be continued, and it identified and estimated the cost of 11 immediate need project components concerning the rehabilitation and replacement of wastewater conveyance and treatment infrastructure within the areas of Mexicali I and II.

A.3.4 Minute No. 294: Facilities Planning Program for the Solution of Border Sanitation Problems (November 24, 1995)

Minute No. 294 determines the need for financially supporting communities along the border in their efforts to improve sanitation conditions. The communities are requesting assistance to achieve certification of their planned projects from the Border Environment Cooperation Commission so that they may obtain financing from international financial organizations that request BECC certification.

A.4 State Laws and Regulations

A.4.1 California Environmental Quality Act

The proposed discharge is not subject to CEQA. No state permits are required, other than review of the proposed interim discharge by the SWRCB and RWQCB. Their review is not subject to CEQA.

A.4.2 Porter-Cologne Water Quality Act

In 1949, California enacted the Porter-Cologne Water Quality Act, which created a SWRCB and nine RWQCBs with broad powers to protect water quality by regulating discharges to ground and surface waters of the state, including discharges by publicly owned treatment works, to rivers, streams, lakes, or ocean waters. Discharges to surface or ground waters are subject to consistency with the Basin Plan and specific conditions and limitations set by the RWQCB, known as waste discharge requirements.

All effluent discharged to surface waters must meet the standards as established by the international treaty or the RWQCB, or the Board will issue an order to cease and desist.

A.4.3 California Air Toxics Act of 1987 (Assembly Bill 2588)

As required by AB 2588, publicly owned wastewater treatment plants with a wastewater flow of more than 20-mgd must conduct a toxic air emission inventory/health risk assessment. The sources of volatile organic compounds, hydrogen sulfide, and as many as 135 other toxic compounds must be identified and inventoried; and the emissions, regardless of how small, have to be quantified.

A.4.4 Air Pollution Control District Rules and Regulations

Existing APCD regulations (Rule 10) require that new treatment facilities north of the border obtain Authority to Construct and/or Permit to Operate permits from the APCD. This review will include air quality modeling of pollutants and requirements for best available control technology or lowest achievable emissions reduction based upon emissions thresholds. The Preferred Alternative and Alternative 2 would be constructed in Mexico.

A.4.5 California Endangered Species Act

Potential impacts to California state listed endangered or threatened species would require the issuance of a 2080 permit by the California Department of Fish and Game as stated under Section 2080 of the California Fish and Game Code. The Preferred Alternative and Alternative 2 would be implemented in the City of Mexicali, Mexico. Also, it is not likely that the New River riparian corridor or flood plain areas affected by the Preferred Alternative or Alternative 2 would provide habitat for listed threatened or endangered species.

A.4.6 Surface Mining and Reclamation Act of 1975

The Preferred Alternative and Alternative 2 would be implemented in the City of Mexicali, Mexico, and thus would not be located in a Mineral Resource Zone of the United States.

A.4.7 California Fish and Game Code Sections 1601-1603

The proposed discharge of treated effluent under the Preferred Alternative and Alternative 2 will occur in Mexico, thus would not require a 1603 Streambed Alteration

Agreement issued by CDFG as stated under Sections 1601-1603 of the California Fish and Game Code prior to project approval.